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Automotive Daily News

★CARS★ SHOP EQUIPMENT TRUCKS ★★AVIATION★★ PARTS ACCESSORIES ★TIRES★

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Highway Development, Bus Bodies and Chassis Discussed by Engineers

Final Sessions of National Transportation Meeting Of S. A. E. Held at Shoreham, In Washington

WASHINGTON, Oct. 30.—Declaration that the building of complete system highways to care for the 26,000,000 motor vehicles operating in the United States has hardly more than begun, was voiced last evening by W. R. Smith, president of the American Road Builders' Association, at the national transportation dinner at the Shoreham Hotel which marked the close of the S. A. E. transportation meeting.

"We have passed from a condition of freedom of travel to a situation where the roads are congested with traffic," said Mr. Smith. "At the present time there is need to put men to work and to start the wheels of industry turning. True economy lies in the improvement of the 2,300,000 miles of roads that are yet unsurfaced. The results of money spent for roads and streets will remain long after the depression has passed. The public interest will truly be served by increased highway programs bringing safety,

(Continued on Page 3)

INDUSTRY FACES HIGHER RATES FOR RAIL SHIPMENTS

Detroit, Mich., Oct. 30.—Automobile traffic managers are now awaiting with interest the final disposition of the proposal of the Interstate Commerce Commission that railroads pool their earnings on certain increased freight rates that are to be allowed providing the added revenue is used to assist the weaker lines in meeting interest charges.

If the plan is made effective, it will add 2 cents per hundred pounds on all shipments of automobiles, parts, steel and tires as well as certain other charges on specified commodities, such as coal, lumber and pig iron, all of which are received in considerable quantities at automobile plants, and will be subject to additional charges of from $3 to $6 per carload. Oil and gasoline would be charged an extra 1 cent per hundred pounds, and all switching charges 10 per cent.

The meeting of the N. A. C. C. traffic managers here yesterday received the reports on appearances made by the chamber and the special committee of traffic managers before the Interstate Commerce Commission at Detroit last week in the railroads' proposal to suspend rules which have always been applied on automobile shipments where cars longer than actually required were furnished by the railroads. The proposed rating would increase

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Poll of Industry Indicates Total October Output of 90,000 Units

Back From Shows Abroad

AMONG THE passengers arriving on the S. S. Europa from Europe were (left to right): William F. Knudsen, president of the Chevrolet Motor Corporation and vice-president of General Motors; Harry T. Hickey, vice-president of the Argonaut Realty Corporation, of General Motors, and Harley Earl, director of the art and color section of General Motors. They are shown above on the deck shortly before the ship tied up to its Brooklyn pier on their return from automobile shows abroad

NEW YORK, Oct. 30.—A wire check-up made by Automotive Daily News on October production by the automotive industry indicates that the total number of vehicle units turned out during the month will be in the neighborhood of 90,000.

Obviously, definite figures could not be returned in most cases, with some production still ahead, but the estimates in most cases are right "on" the actual totals. It was not possible to get an accurate estimate of Ford world production because of the delay in returns coming in from some distant points.

Our estimate of 90,000 vehicle units compares with 158,942, which was the total for October, 1930. The second obvious comparison is with September of this year, when the industry's total output of vehicle units was 143,212. In making these comparisons it should be borne in mind that a number of popular makes of cars last year had announced new models before this date, with a consequent increase in sales. This year these makes have not yet presented their new lines.

Macauley Criticizes Federal Tax Proposal as Unfair to Industry

Says Plan Is Ill-Advised And Would Delay Trade Recovery

NEW YORK, Oct. 30.—Commenting today, for the first time on recent suggestions that a Federal excise tax on automobile sales be introduced in an effort to relieve the country's financial difficulties, Alvan Macauley, president of Packard Motor Car Company and of the National Automobile Chamber of Commerce, charged that the proposals constituted an unwarranted discrimination against the country's twenty-six and a half million motor vehicle owners.

"Such proposals," declared Mr. Macauley "have been advanced on the utterly fallacious and discredited theory that motor vehicles are still luxury items.

"With ownership of automobiles concentrated, according to government statistics, among farmers and wage earners in the lower income groups, classes which have already suffered severely from the depression, it would be an injustice to impose additional burdens on them," he asserted.

"Surveys conducted by the U. S.

(Continued on Page 2)

BENDIX 9 MONTHS EARNINGS EXCEED LAST YEAR MARK

Chicago, Oct. 30.—Bendix Aviation Corporation reports for nine months ended September 30, 1931, net profit (including $411,000 non-recurring income) of $1,787,976 after charges and taxes, equivalent to 85 cents a share on 2,097,663 no-par shares of capital stock. This compares with $1,718,184 or 81 cents a share on

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FORD OFFICIALLY RETURNS TO BASIC WAGE OF $6 A DAY

Detroit, Oct. 30.—Dame Rumor got busy yesterday, and as a result the story went from lip to lip and even got on the ticker that the Ford Motor Company had revised its wage rates downward. This produced a formal statement from company officials denying the talk.

In this statement it was declared that the Ford company had not changed its standard wage rates

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DURANT DENIES PLANS TO REORGANIZE COMPANY

New York, Oct. 30.—W. C. Durant, in an official statement yesterday, denied that a creditors committee had been formed to take over the Durant Motors, Inc., or that any such committee was being considered at the present time.

Mr. Durant also denied rumors that the present company is contemplating reorganization at the present time. There is no announcement at the present time of a successor to fill the vacancy created through the recent resignation of Hal W. Alger as general manager of the company.

DONALDSON OF AUTO-LITE RECOVERING FROM INJURY

Toledo, O., Oct. 30.—O. M. Donaldson, sales executive of the Electric Auto-Lite Company, Toledo, O., is still confined to his apartment through an injury to his thigh received some time ago. Although Mr. Donaldson is rapidly recovering from his injury.

S. A. E. COMMITTEE MOVES TO CLARIFY RATING PROBLEM

WASHINGTON, Oct. 30.—Clearing the way for a definite method of rating capacities of motor trucks and buses here yesterday, the special committee on truck and bus rating of the Society of Automotive Engineers decided that the problem should be considered from three angles.

1. Gross weights in thousand pounds.

2. Grade climbing applied in per cent.

3. Speed maximum guaranteed.

The gross weight rating was specified to be that which the manufacturer of the vehicle will guarantee and fully consistent with the tire equipment furnished.

The committee also decided that they would meet at the earliest possible time for further consideration on matters of this meeting, preferably to take place before the national meeting in Detroit.

Tire Dealers Announce Chicago Meeting Program

CHICAGO, Oct. 30.—The program for the twelfth annual convention of the National Tire Dealers' Association—the first under the new process of organization decided upon last year—was announced here today at headquarters of the association. The meetings will be held in Detroit, at the Hotel Statler, November 16, 17 and 18.

Following a welcome by Mayor Frank Murphy of Detroit, the convention will be formally opened by Martin J. Barry, president of the association. The balance of the morning session on November 16 will be occupied with a discussion of truck and heavy duty tires and an address on "Tire Dealers Rim Problems," by H. S. Burdette of the Goodyear Tire and Rubber Company.

On the afternoon program will be talks on "Recommended Accounting Methods," the speaker to be selected; "Business Management," by Prof. Horace Secrist, director of the bureau of business research,

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First Publication Anywhere of 9 Months' Passenger Car Sales by Makes and States

see pages 10 and 11

Macauley Criticizes Plan To Tax Motor Vehicles

(Continued from Page 1)

Bureau of Public Roads have long since justified the removal of the automobile from the luxury class," said Mr. Macauley. "Traffic counts taken in various sections of the country have established conclusively that fully sixty per cent of all vehicular movement is for business purposes. The automobile is a highly essential tool in the conduct of nearly all business."

According to Mr. Macauley, the proposal is particularly ill-advised coming at a time when the country is looking to the motor industry for leadership inthe restoration of business stability.

"Not only is the automobile industry directly one of the largest employers of labor in the country, but indirectly it benefits the workers in every state of the union because of its dominating position as a consumer of raw materials and semi-manufacturered products.

"With automobiles already the most highly taxed class of property in the country today, suggestions that the burden on car owners be increased is insidious in its implication," declared Mr. Macauley. "Last year, motor vehicle taxes exceeded a billion dollars—or more than 7 per cent. of the aggregate budgets of all national, state and local governments. Taxes on automobiles for the country averaged $32 with averages in some states running as high as $63."

Studies conducted by the National Automobile Chamber of Commerce, according to the motor spokesman, have produced definite evidence that in many states, taxes already are so high, as to restrict the number of individuals who can afford to own cars.

"The public should remember in its consideration of these proposals that the tax could not be absorbed by the automobile manufacturers but would have to be paid by motor car buyers," the industry executive explained.

"Consider what this would mean on the basis of the 10 per cent. tax which has been suggested," he challenged. "The immediate effect would be to increase the cost of the lowest-priced car on the market today by more than $40 and it would increase the price of the average car by about twice that amount. In the case of higher priced cars, the taxe would run from $300 to $1,000 per unit.

"At a time when automobile manufacturers are doing everything in their power to bring down the cost of their products in an effort to break the jam of buying apathy and pave the way to the return of normal business, the legislators should consider the matter carefully before placing a burden of this dimension upon them.

"Even as an emergency measure to increase the Federal government's revenue, the suggestion of an automobile sales tax is untenable and impractical," asserted Mr. Macauley.

"During the depression, a vast replacement market has been created because people have postponed the purchase of new cars awaiting some reassurance as to the security of their employment and their income. The power of this replacement market to play a dominant part in restoring prosperity would be jeojardised by the suggested taxation."

Mr. Macauley announced that he would appoint a special committee of the automobile industry's leaders to study the tax proposals and to recommend to the industry through the National Automobile Chamber of Commerce the policy to be followed.

BENDIX 9 MONTHS EARNINGS EXCEED LAST YEAR MARK

(Continued From Page 1)

2,122,633 shares in first nine months of 1930.

For quarter ended September 30, 1931, net profit was $275,631 after charges and taxes, equal to 13 cents a share on 2,097,663 shares, comparing with $713,688 or 34 cents a share on 2,097,663 shares, in preceding quarter and $187,247, or 9 cents a share on 2,122,633 shares in third quarter of previous year.

Company is currently conducting a sales campaign among 50,000 possible outlets for its new seamless flexible metallic tubing recently developed by Bendix Aviation Corporation. Orders for 1932 delivery of 3,000,000 feet of new product have already been secured. Officials believe this new tubing will profitably and significantly extend the company's activities in both the industrial and automobile fields.

KETTERING RETURNS FROM PARIS, LONDON SHOWS

New York, Oct. 30.—Charles F. Kettering, vice-president of General Motors, in charge of the research division returned from a two months' visit to Europe today, on board the steamship Europa of the North German Lloyd Line.

While Mr. Kettering was abroad he visited the automobile shows in Paris and London

GERMAN AUTOMOBILE COMPANIES TO MERGE

Berlin, Oct. 30.—Contrary to general expectation, the present crisis in Germany has not to date increased industrial or banking concentration. This is because no company can make a just valuation of assets, because regular markets for securities and real estate do not exist and it is impossible to procure new capital.

The only combination projected in recent months concerns four automobile companies in Saxony, three of which are largely indebted to the Saxon State Bank, which seems to have sponsored the project. They are Horch-Werke, which produces a well-known eight-cylinder car, but has paid no dividends for several years, and has accumulated banking debts of 8,000,000 reichsmarks.

Another company, DKW, which has 5,000,000 reichsmarks debts with the Saxon State Bank, produces one of the cheapest German cars, and has satisfactory sales, but made no profits in recent years.

Audi-Werke, the third company, is an affiliate of DKW, producing a small number of eight-cylinder cars.

The fourth company involved, Wanderer Werke, producing six-cylinder middle priced cars, has no banking debts. It is controlled by Dresdner Bank, and its approval of the amalgamation is not yet assured, although its factories are near those of DKW.

"NIXITE"

WE PERPETUATE FINISH

This is the Wonder Finish that you have been waiting for. Can be used on all Metals, Woods, Glass, Gold, Silver and Autos, leaving a hard, dry, flint-like finish. Is applied like any polish.

NO WAX OR OIL! NO STRONG ABRASIVES

such as Acids, Grit, etc. Instead, "NIXITE" has a mineral base, and this also acts as an abrasive strong enough to cleanse any article. But it builds up the paint instead of wearing it down. Time, Labor and Material saved. *Agents wanted.*

THE NIXITE LABORATORIES, INC.

3042 A. I. U. Building, Columbus, Ohio

ARTHUR A. NIXON, *Director of Sales*

INDUSTRY FACES HIGHER RATES FOR RAIL SHIPMENTS

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the minimum carload weight in such cases.

It was also reported at the N. A. C. C. meeting that Southwestern and Western trunk line railroads have decided to extend the expiration date of the tariffs published several months ago, providing special rates on automobile shipments for distance up to 500 miles in competition with motor truck haulage of new cars from the factories and assembling plants.

These rates were originally published to expire in December. They have been in a measure successful and rail carriers have decided to continue the plan.

Considerable interest is being shown by the traffic managers in an experimental car built by the Pennsylvania Railroad, 70 feet in length and designed to handle automobile shipments at lower cost. The car is equipped with loading devices that would eliminate blocking and decking expense and is now being demonstrated at automobile plants in this territory.

A number of the traffic managers also attended the hearing now being conducted in Detroit by Examiner Bardwell of the Interstate Commerce Commission which is inquiring into railroad practices in placing and switching cars at plants having side tracks. At the Detroit hearing, the examiner is taking testimony of Michigan railroads with respect to their services of this character at the plants of automobile manufacturers and other Michigan industries.

Factories represented at the N. A. C. C. meeting included Auburn, Buick, Cadillac, Checker Cab, Chevrolet, Chrysler, Dodge, Federal, General Motors, Graham-Paige, Hudson, Hupp, International Harvester, Lincoln, Oakland, Reo, Studebaker, White, K. A. Moore, N. A. C. C., and J. S. Marvin, chairman of the conference.

KNUDSEN SEES GOOD MARKET FOR CARS IN SCANDINAVIA

New York, Oct. 30.—William Knudsen, president of the Chevrolet Motor Company, a division of the General Motors Corporation, who returned Thursday on the Lloyd liner Europa from a six weeks' survey of the European automobile field, stated that, provided we do not abuse our opportunities by further tariff legislation against Scandinavian countries, these countries appear to hold out the brightest future for the exportation of American cars.

"The fact that Scandinavia possesses few of the raw materials used in the manufacture of automobiles," he said, "makes it necessary to import, and they naturally will favor the country which is most favorable to their own products."

Mr. Knudsen expressed the opinion that the American auto industry has taken a definite turn upward, and predicted that Chevrolet would show a 10 per cent. increase in its business for 1932. "The bottom of the depression in the motor industry was reached three months ago," he said, "and there has been a definite improvement since. While I do not look for any marked advance, I am of the opinion that we will see the industry continue to show constructive developments from now on. As to Chevrolet, we should do a much more satisfactory business in 1932."

Mr. Knudsen considers the auto export problem too individual to find a solution in the recent suggestion of Andre Citroen that an international company be formed to take care of the export trade.

NEWARK (N. J.) AUTOCAR BRANCH IN NEW QUARTERS

Newark, N. J., Oct. 30.—The Newark branch of the Autocar Company, motor truck manufacturer, has moved from its old location on Frelinghuysen Avenue to a new building which has just been erected for its exclusive occupancy at Jefferson and Malvern Streets.

SPARKS from DETROIT

A Birthday Cake That Has Properly Risen

* * *

Another Fisher Wins

* * *

A "Natural"

* * *

Walter L. Githens

Chris Sinsabaugh—Detroit Editor

I CAN smell another birthday cake baking, this time Chevrolet. It will be ready for the candle lighting next Tuesday, when old Father Time will duly record in the big book the twentieth anniversary of this powerful General Motors unit.

What a lot of automobile history has been made by this concern in the two decades since Louis Chevrolet, at that time one of our greatest race drivers, started in a little shop on Grand River Avenue, Detroit, building experimental cars! In less than two years the job had caught on and a larger plant was secured, which was used until 1913, when operations were transferred to Flint, with New York city and Tarrytown, N. Y., as contributing factors.

* * *

BUT the real start of Chevrolet came in 1915, when it entered the volume field with its 490, named for its price. In passing, it is worth recording that this was Chevrolet's lowest base price until the advent of the 1931 line, when the new low of $475 was established.

The first year of the 490 produced 70,000 units, a record-breaking volume for the time, but almost infinitesimal when you recall that only a short time back—in June, 1929—Chevrolet turned out twice that number in a single month.

Up until 1918 Chevrolet was just another car. On May 2 of that year General Motors took over the company, and, oh, boy! what a difference the stimulus of new blood and new policies made! Why, in 1925, production went over the half-million mark for the first time, and two years later it exceeded a million. The four-cylinder was dropped November 18, 1928, and in the year following the new six exceeded all previous records of the smaller four.

And now looket! Eight million Chevrolets have been built and sold in those two decades.

* * *

THE first of the second generation of the Fishers has achieved recognition in a big way in the business world. Charles T. Fisher, Jr. (we don't have to tell you who his father is), has just been named as secretary of Association No. 2, Federal Reserve District 7, of the National Credit Corporation, said corporation being the one that has sprung into being at the call of President Hoover to set up that five hundred million dollar proposition. Young Fisher is no stranger at banking, having been assistant to the vice-president of the Guardian-Detroit Union Group, which means something in the financial world out this way.

* * *

THERE'S considerable jubilation at the factory through the Hudson having been chosen as the first car to officially cross the great George Washington Memorial Bridge, hooking New York and New Jersey and spanning the river that bears the same name as the trail-blazing automobile. But then, in the language of the crap shooter, this coincidence was a "natural."

* * *

THE Grim Reaper summoned another of the veterans the other day, this time Walter L. Githens of Chicago, one of those sturdy pioneers who helped lay the foundation of this industry of ours. In our Chicago days Walter Githens was one of the prominent figures along the row. Way back, when Oldsmobile was a curved-dashed runabout, Githens sold it in Chicago, and, as we remember it, one of his crack salesmen in that time was none other than James Levy, himself one of Chicago's oldest retailers.

Contemporaneous with Githens were Ralph Temple, Tom Hay, Henry Paulman, Louis Geyler, Bill Tennant, George Bird, Joe Gunther, Joe Davis and Harry Bransteter. Some are still with us, but many of the old boys have passed along.

Mr. Githens of late years has been identified with the industry through his automobile financing company. His brother, Herbert A., was for years vice-president of Federal Rubber.

S. A. E. Transportation Meeting Comes to Close

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economy and comfort to the traveling public."

Other features of the last day of the meeting included a morning technical session at which the relations of motor coach bodies and chassis were dealt with exhaustively by R. W. Naegel, of the Bender Body Company and G. H. Scragg of the International Motor Company, with general discussion following. The afternoon session featured a survey of fleet-servicing methods and set-ups, contrasting self-maintenance of such units with service-station maintenance.

In discussing the necessity of highway improvement, Mr. Smith stated that there are now thirty-seven vehicles per mile of road in the United States, contrasting with one car for every mile of road in 1902.

Urging the public economy of road improvement, he stated:

"Extensive research work has shown that the operating costs of an average motor vehicle is two cents a mile greater on an unimproved highway than on a surfaced road. It is clear, therefore, that an unimproved highway carrying 1,000 vehicles a day costs the vehicle owners $20 a mile in increased operating costs more than they would pay on a surfaced road. In a year this loss amounts to $7,300, sufficient to pay the cost and maintenance of a $93,000-per-mile highway, or several times the cost of the best type of highway.

"Let us approach the matter of economy from another direction. Just how much has the public saved by improving 700,000 miles of surfaced highways? The gasoline consumption in 1930 was 15 billion gallons. Half this fuel probably was used in vehicles traveling on surfaced roads, so that vehicles traveling only 12 miles on a gallon traversed 90 billion miles of highways.

From the figure of 2 cents a mile saved to the vehicle driver because of the improvement of the highways, it appears that the saving to the public due to the surfaced roads is $1,800,000,000 annually. This sum would have been paid out by the traveling public had the roads not been surfaced. The money saved is more than is expended on roads, a large part of which goes for capital investment in more improved roads, which, in turn, save more dollars for the taxpayers."

Emphasizing the importance of highway maintenance and construction, Mr. Smith said:

"The public investment in motor vehicles and in roads and streets on which they operate now approximates $30,000,000,000. This amounts to more than the total investment in railroad tracks and rolling stock. It makes highways the largest public utility in the United States. This investment must be maintained at proper working efficiency and additions made to the useful system to reduce the cost of transportation as well as to facilitate the speed and comfort of travel."

Discussing the relative fields of the highways and railways, Mr. Smith said:

"Many railroads are operating motor freight and bus lines. In 1930, about eighty railroads operated 4,000 buses and sixty railroads operated 7,000 trucks. The property investment in railroads in motor freight equipment was about $40,000,000 in 1930.

"Travel on railroads in 1929 amounted to 31,000,000,000 passenger miles. The passenger miles traveled on highways, based on gasoline consumption of twelve miles to the gallon and two passengers per car, is about 300,000,000,000 passenger miles.

"The ideal situation, as stated by officials of the Interstate Commerce Commission, would be for passengers and freight to be handled by the most economical transportation agency. Today there are many forms of transportation, each offering certain advantages for the shipper or traveler. The interests of the public should be considered of first importance in any matter of transportation."

Evolution of the present complicated motor coach chassis from the original truck chassis used for buses and its relation to the body was discussed interestingly by George H. Scragg of the Mack Motor Truck Corporation. Mr. Scragg's paper will be found elsewhere in this paper.

R. W. Naegel of the Bender Body Company, stated that he believed the use of cross member mounting had been most successful in overcoming the twisting motion of frames since this construction gives the chassis freedom to move without the possibility of the twist in the chassis side rail being arrested or transferred to the body. Concluding he said: "The relative weight of body and chassis is very interesting. Body frame including roof, floor and exterior paneling equal 17.87 of the total weight of the bus body trim and miscellaneous equipment equal 12.08, and seats equal .75, making a total for the body of 38.60 and a total of 61.40 for the chassis. This estimate is for an intercity coach, per centages varying slightly on city types. A discussion of various types of ventilation for buses, with their accompanying advantages and disadvantages, was sponsored by E. S. Pardoe of the Capital Traction Company with Ewan Frazier, of Baltimore; and B. B. Bachman, of the Autocar Company also speaking briefly on this phase of the bus problem. Elimination of gases in buses was discussed by E. J. Graham, of the Public Service Company of Colorado, who suggested that gases might be gotten rid of by streamlining the body rear end thus cutting down vacuum tendencies. Dr. H. J. Dickinson, of the Bureau of Standards, discussed the plan of introducing air into the compression chambers of engines to eliminate gases.

A. J. Scaife, president-elect of the S. A. E., stated that the industry was to be congratulated on new motor coach designs. "The body does not fight with the chassis, nor does the chassis quarrel with the body in the newer designs," he said. "I believe that further co-operation between the body and chassis manufacturers will be productive of further good results."

A. H. Gossard declared that he believed bus design should trend toward a shorter wheel base and a more even distance between the front and rear wheels. He also suggested that there was room for improvement in spring design so as to secure the maximum of riding comfort with a sturdiness that would necessitate few repairs.

Problems of both heating and cooling buses were also brought up by Mr. Gossard, who declared that these were new concerns of the chassis manufacturer rather than of the maker of accessories. The future, he said, may see the use of cooling systems in buses taken quite as much a matter of course as heating is at present.

AUTO-LITE ASSURED OF MAINTAINING $4 DIVIDEND RATE

Toledo, Oct. 30.—Auto-Lite Company's present $4 annual dividend rate is assured of being maintained by the company's earnings of $1.01 a common share in the third quarter, according to a statement issued by the company.

The statement follows:

"The management feels much encouraged to think that the company could earn its present dividend rate during the third quarter, which was the poorest quarter the automobile industry has seen for at least ten years. This assures the permanence of at least the present dividend rate."

The company is maintaining a production of 15,000 electric clocks daily, and this part of the company's business is providing employment for 1,000, who otherwise might be laid off, according to Daniel H. Kelly, executive vice-president. The company thus is maintained intact and will have labor available to produce units scheduled for new models in the fourth quarter.

TIRE DEALERS PLAN LIVELY DISCUSSION AT ANNUAL MEETING

(Continued from Page 1)

Northwestern University, and an address by F. B. Davis, Jr., president of the United States Rubber Company. A number of committees will be appointed by President Barry at this session.

The morning of November 17 will be devoted to talks on "Battery Merchandising," by Harry A. Harvey, sales manager of the USL Battery Corporation; "Brake Service and How to Merchandise It," by Harry L. Faust, sales manager of the John Bean Manufacturing Company, and "Whel Alignment," by Will Dammann, president of the Bear Manufacturing Company.

The afternoon session will be given over to addresses on "Tire Sales From a Super Service Standpoint," by Martin O'Neill, manager of dealer relations, Firestone Tire and Rubber Company; "Tire Sales From a Strictly Tire Store Standpoint," speaker to be selected, and an open discussion on "What My Local Association Has Accomplished for Me." In the evening a dinner and discussion will be attended by sales managers of the tire manufacturers and board members of the National Tire Dealers Association.

A talk on "Tire Dealers Advertising Problems" by a speaker to be selected is scheduled to open the third and final day of the convention. S. B. Harper, director and past president of the association, will then discuss the subject of "Opportunity of the Independent Dealer." At the afternoon session various reports will be submitted, after which officers and directors will be elected. The convention will come to a close in the evening with the association's annual banquet and entertainment, at which J. D. Tew, president of the Rubber Manufacturers Association, will be the guest of honor, and President Barry of the dealers association will be the presiding officer.

FORD OFFICIALLY RETURNS TO BASIC WAGE OF $6 A DAY

(Continued From Page 1)

or abandoned its basic wage principles. The minimum wage now in effect is that paid by the company throughout the so called "prosperity" period from 1919 to 1929, the statement said. It explains that following the Hoover conference in December, 1929, it came to bat in this emergency by increasing the minimum from $6 to $7 a day to help the President in his efforts to regain business normalcy. In the following twenty-two months Ford's increased wage totaled $35,176,101 or an average of $1,600,000 a month, with the total payroll for the time $397,442,837.

Three weeks ago the shops returned to the $6 a day minimum for ordinary labor, grading upwards in the more skilled jobs.

"The probationary rule by which a man is hired in at $5 a day has been abandoned," the company says. "In all cases of newly hired men at ordinary shop labor, the minimum $6 rate will apply at once. Hiring in pay under present schedules ranges from 75 cents to $1 an hour, according to the rate of employment."

LAUDER GENERAL MANAGER OF THE TRINDL CORPORATION

Aurora, Ill., Oct. 30.—A. W. Lauder has been appointed general manager of the Trindl Corporation, manufacturer of piston pins, valves, piston rings and bolts and bushings.

About two years ago the entire manufacturing plant was moved from Chicago into a much larger and up-to-date light plant at Aurora, Ill. The products of the Trindl Corporation are used for original equipment as well as by the replacement trade. Jobbers in every automotive center throughout the world are distributing Trindl parts.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRINGS RESULTS

Bendix Explains Action Of New Startix Device

South Bend, Ind., Oct. 30.—An automatic device that starts an automobile engine the moment the ignition key is turned in its lock and which, without thought or effort on the part of the driver, re-starts the engine any time it stalls, has just been announced by the Bendix Aviation Corporation.

Following closely the announcement of Bendix clutch control, the new device is the second automotive product to be brought out by Bendix since August. It will be sold direct to automobile owners, as well as being made standard equipment on various makes of cars.

Known as Startix, the new Bendix product is expected to add considerably to the safety of motoring, as well as ease of operation. Installation is simple and the device retails for $10, plus installation cost.

The Startix parts are contained in a 3¼x4x1⅝-inch metal box, designed for placement underneath the hood. Four terminals on the box are connected to the battery, the generator, the starting motor and the ignition switch.

The principle of Startix is based on two solenoids, or electro magnets, with moving plungers. One is called the main switch solenoid and the other the relay solenoid. When the ignition key is turned to its "on" position, electric current passes through the main switch solenoid, pulls its plunger down and makes a switch contact, the same as is done by the conventional starter button switch. Thus electric current flows from the battery to the starting motor, which begins rotating, causing the Bendix drive to mesh with the engine flywheel gear, cranking it until the engine starts.

After the engine starts, the electric current then being supplied by the generator, instead of the battery, is transmitted to the relay solenoid. This pulls down the relay solenoid plunger and automatically disconnects the electric circuit to the starting motor.

If the engine stops at any time while the ignition key is at its "on" position, the relay solenoid plunger is released, automatically closing the circuit to the starting motor and the starting cycle is repeated.

Bendix engineers stress the safety features of startix, pointing out that it prevents engine stalling at railroad crossings, where so many accidents occure due to motor failure; that it is a protection against collisions in traffic caused by stalled engines, and that in case of motor failure on hills the driver has both feet and hands free to operate clutch and brakes while the engine is being automatically started.

Besides the safety factors, Startix is expected to appeal particularly to women drivers, because on many cars it is extremely difficult to reach the starter button with the foot, frequently resulting in soiled shoes and hosiery.

W. C. HEATH TO JOIN A. O. SMITH CORPORATION

Milwaukee, Wis., Oct. 30.—W. C. Heath, vice-president of Fairbanks-Morse & Co., Beloit, in charge of manufacturing, resigned his position, to take effect November 1, to join the A. O. Smith Corporation in an executive capacity. Mr. Heath has been with the Beloit concern since 1909, when he joined the engineering staff.

$6 Profit in 10 Minutes

for dealers who sell Pines Winterfronts

1931 promises more sales than ever on this motor necessity.

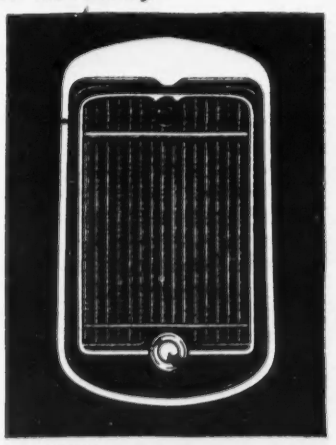
HERE'S the profit opportunity you've been looking for. You actually earn $6 in 10 minutes by installing Pines Automatic Winterfronts! Your investment is small . . . prices are low . . . turnover is fast. And your profits are exceptionally worth while!

Motor car owners are more anxious than ever to make every dollar count. To Pines dealers that means one thing . . . more Winterfront sales. Because Pines Winterfront is a *necessity*, not a luxury. The public realizes that cold weather endangers the life of motors not equipped with this automatic protection . . . that Pines Winterfront provides motor insurance worth many times its cost.

New low prices on Pines Winterfront, too. $15 for small size; $20 for large size.

Don't miss this chance for extra fall and winter profits. Order your Winterfront stock right now. If you do not handle Pines Winterfront and want more information, get in touch with your nearest Pines distributor. Or write us for his name.

PINES WINTERFRONT COMPANY
1151 North Cicero Ave., Chicago



NEW PINES FUEMER

A New Profit-Maker for Dealers

Here's the new device—the Pines Universal Fuemer—the only device that instantly starts cold motors! It fits all model cars and motors and can be installed in a jiffy. Used as standard equipment by three fine car manufacturers. Not merely an accessory, but a NECESSITY. Ask your Pines distributor for full details.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

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SATURDAY, OCTOBER 31, 1931

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The Automotive Industry Will Lead

HEAVEN forfend that we should predict the moment when depression shall turn upward toward the renewal of prosperity. Perhaps, all unnoticed, that happy event, already has occurred. The late Dwight Morrow, on being asked when the depression would end, answered sagely: "Just about sixty days before any one realizes it."

However, there is one prophecy upon which we shall venture and that is that when the upward turn becomes patent to all, the automotive industry will be found leading the march to recovery.

This condition is due partly to the far-sighted attitude of our industry in generally maintaining production schedules at demand levels and partly to the inherent nature of the business.

It is assumed today that the useful life of a motor vehicle is seven years. This means that the vehicles built in 1924 will be scrapped some time during the present year. It happens that 3.700,000 motor vehicle units were built in 1924 by the automotive industry. This then is the number of units to go out of operation during 1931. But, because of world-wide conditions, the automotive industry this year will produce under 2,500,000 vehicle units. The differential under actual replacement needs will amount to 1,200,000 units or more. For the first time in history registration of motor vehicles in this country this year will show a decrease under the total listed the year before.

This induces the condition referred to by economists as "a delayed market." We may assume that any man, woman or youth who once has owned a motor car still wants one. Business conditions have conspired to make some of our people forego ownership of motor vehicles for the time being. We may also assume that every one of these people is determined to replace his vehicle at the first possible minute. They still are potential and prospective motor vehicle buyers and owners. This constitutes the delayed market. That market will become active at the first sign of business revival.

The make-up of the automotive industry is such that the moment its business shows signs of revival, the benefit of such increased sales is felt throughout the nation. Automobiles are sold in every hamlet in the country. The effect of the sale of these vehicles reaches to every corner of the country. Money is put in circulation everywhere, affecting not only the automotive industry but general business as well.

There is scarcely another industry, improvement in which would exert such a general uplift as it would in our own particular business. It is important that the railways should be allowed to earn a decent return on their operations. Railway money goes far. The rail systems reach north and south and east and west over the country. But even the railways do not reach into the remotest sections as does the sales division of the automotive business.

An improvement in the steel business would help general conditions, but the effect would be far slower in seeping through to the country in general than would an upturn in motor vehicle sales.

At the present time the shoe industry is enjoying the best business it has had in a long time, but here again the effect is slow in reaching the country as a whole. Textiles are apparently on the mend, but the uplifting effect still is confined to the industry which is enjoying it and to the comparatively few places directly concerned in production.

Col. Leonard Ayres, the Cleveland economist, has been one of the most consistent holders of the view that the automotive industry will lead the country out of its business doldrums. Recently he has rather swung to the belief that the railways must do the leading, but we adhere to his first view and expect to see our own industry in the van. Furthermore, with the backing of so keen an observer as R. H. Grant of General Motors, we predict that the automotive industry will begin to "do its stuff" in the spring of 1932.

As Our Readers See It

OPINIONS expressed in this column are those of readers of Automotive Daily News and do not necessarily represent the views of its editors or owners. Readers are cordially invited to use this space to discuss any problems of interest to the automotive industry as a whole.

Outsell Your Prospect On His Car Value

By CHARLES P. MEIGHAN
Hudson-Essex Dealer,
Johnstown, Pa.

Just a few words in your column relative to the used car problem. I have been selling automobiles since early 1919 and have never considered the used car a problem. On the contrary, I consider it a part of the business, and money can be made out of it just as well as the sale of new cars, just as soon as the dealers make up their minds that they are better salesmen than the prospect who wants to trade in for a new car, and if the dealer or salesman is not, my suggestion would be for him to get in another business. There has been much written for the past several months about longer discounts. In my opinion, they would only make it harder on the better dealer and easier for the small dealer, who has little overhead and less service.

Treat the owner as a business man, don't give discounts, don't give too much for a used car, and we can all survive. We have only ourselves to blame when we lose money on a used car; for certainly we should know how much a used car is worth before we take it in. I have heard so many times — how this car has been taken care of—it is better than new, etc., that it doesn't bother me at all. Take them in right, fix them up and sell them right, is my advice.

Tire Sales Lead Way to Increased Truck Sales

By W. J. SINCLAIR
New England District Manager,
The Norwalk Tire and Rubber Co.

The writer subscribes for your daily paper and enjoys reading it.

It occurred to me as I read it this week that it might be interesting news to you, also some of the subscribers, to know that a Worcester trucking agency, also one of your subscribers, have found the way to increase their sales without any increase to overhead.

The Young Federal Company, 305 Shrewsbury St., Worcester, Mass., distributors of Federal Trucks, have a showroom and service facilities for the sale of trucks. They maintain service men, an overhead and a sales organization. Without the necessity of increasing expense in any of these departments, they have taken on the Norwalk Tire and have found that their contact with the truck operator has enabled them to sell a great many tires, but of more importance to them is the fact that the tire business has given them an entry which has actually allowed them to sell trucks to accounts they have never sold before.

This information might be beneficial to others.

Says Dealer Needs Larger Discounts to Make Profit

Automotive Daily News:

I have been reading letters sent you by dealers regarding larger discounts to automobile dealers that have appeared in your paper recently with a great deal of interest.

Larger discounts are necessary if we are going to correct some of the errors in the business and give the dealer a chance to make a net profit.

1. Every auditing firm, banker or business man that I have talked with has stated that automobile dealers generally cannot make a profit at present discounts allowed.

2. Many men who at times have been interested in taking on an automobile dealership have hesitated because of the small discount or gross profit.

3. In order to show a profit it will be necessary to correct certain evils now used. A larger discount will help this.

4. Dealers generally will not pass this higher discount on to purchasers by additional allowances on used cars.

5. Now is the time to make an increase, so that we can make a clean-up in the large volume of business the factories lead us to believe is coming, due to replacements.

6. Many factories tell their dealers that they should allow from 3 to 10 per cent. more than market for trade-ins. Some have even set up an over-allowance figure on their statement, expecting dealers to show these figures each month, yet I know of no factory that has offset this suggestion by increased discounts to dealers.

7. We are informed that an increase of 3 per cent. on the list price of all automobiles will furnish a fund that will take care of junkers. There is no reason why this 3 per cent. could not be added to the present list. At any rate, the dealer should not be called upon to take this loss.

8. The theory in high wages is that an employee will be able to save something out of his income or at least purchase some of the luxuries of life. If a man earning $150 per month spends this entire amount for living there is no chance of saving; however, if he were paid $250 a month his living costs would not increase to this extent, but he would be provided with a margin for saving. This same theory can be applied to the selling of automobiles. If a dealer cannot make a profit on 25 per cent. discount, he has a better chance at 30 per cent.

9. We have a dealer in this city who gets 40 per cent. discount on his line of cars. He leads the sales in his class. The factories of other dealers complain because their dealers do not get a like proportion of business. How is it possible for a dealer getting 25 per cent. or 30 per cent. to compete with this dealer who is getting 40 per cent?

I believe that an increase in list price, thereby enabling dealers to get larger discounts, will not lessen the sale of new cars. It will enable dealers to make a profit, thereby being a better dealer for his factory and being rewarded by that financial incentive which keeps men in business.

What we need now is something to encourage dealers and give them an opportunity to earn a profit.

E. G. HOFFMAN, Manager
Kastner-Reinhardt Franklin Co.,
Seattle, Wash.

STUTZ ADDS SUPER-BEARCAT ROADSTER TO 1932 LINE

Indianapolis, Ind., Oct. 30.—As a leading feature of its new 1932 line of automobiles, the Stutz Motor Car Company of America, Inc., announces the Super-Bearcat, a powerful sports roadster, built on the DV-32 chassis.

INCREASED SERVICE SALES 30% OVER LAST YEAR

By FRANK POSEY,
Ammon R. Smith Auto Company,
Chevrolet Dealer, York, Pa.

We can advise that the decrease in the sale of new automobiles has not affected the volume of service work. In fact, we have practically doubled the service volume over the years when sales of new cars were good.

Up to the present time we show a 30 per cent. increase over 1930; this pertains to sale of labor.

In reference to getting service work into our shop, we have devoted more time to the sale of labor than in previous years. This department had been almost overlooked, and we are now using a follow-up system for each customer. Just this week we have arranged with the Pennsylvania Motor List Company to furnish us names of all car owners in our zone of influence, this being approximately 7,000 names, which we expect to card and contact in regard to service work.

FORD TAKES UP OPTION ON PROPERTY IN OHIO

Erie, Pa., Oct. 30.—The Ford Motor Company has definitely taken up an option on 365 acres of land in Richmond and Painesville townships, Lake county, O., just west of this city, as a site for a new assembly plant. No definite announcement has been made as to just when construction work will be started.

STOUGHTON CO. TO ADD NEW TYPE TRAILER

Stoughton, Wis., Oct. 30.—The Stoughton Company, one of the oldest manufactuers of highway transportation equipment in the country, is bringing out a new trailer to be known as the Stoughton Cushioned Fifth Wheel trailer.

COMING EVENTS

NOVEMBER

5-14—**London, England.** International Commercial Motor Transport Exhibition, Olympia Hall.
10-12—**Chicago, Ill.** American Petroleum Institute, annual meeting, Hotel Stevens.
28-Dec. 9—**Brussels, Belgium.** Automobile Salon.
29-Dec. 5—**New York, N. Y.** Automobile Salon, Hotel Commodore.
30-Dec. 4—**New York City.** American Society of Mechanical Engineers, annual meeting.

DECEMBER

7-12—**Atlantic City, N. J.** Motor and Equipment Association and National Standard Parts Association, Joint Trade Show.
9-11—**Atlantic City, N. J.** American Institute of Chemical Engineers, meeting.

JANUARY

9-16—**New York City.** National Automobile Chamber of Commerce, National Automobile Show.
9-17—**Los Angeles.** Annual Automobile Show of the Los Angeles Motor Car Dealers Association.
10-13—**Chicago.** National Wheel and Rim Association, annual convention, Edgewater Beach Hotel.
11-14—**Detroit, Mich.** American Road Builders Association, twenty-ninth convention and show.
14—**New York city.** Society of Automotive Engineers, annual dinner, Pennsylvania Hotel.
16-23—**Newark, N. J.** Newark Automobile Dealers' Association's annual show.
16-23—**Buffalo, N. Y.** Annual automobile show of Buffalo Automotive Trade Association, Inc., 174th Regiment Armory.
17-23—**Cincinnati.** Automobile show of Cincinnati Automobile Dealers' Association.
17-23—**Milwaukee.** Annual Automobile Show, Milwaukee Automotive Trades, Inc.
22-30—**New York.** National Motor Boat Show, Grand Central Palace.
23-30—**Baltimore.** Annual Automobile Show.
23-30—**Minneapolis.** Annual Automobile Show of Minneapolis Automobile Trade Association.
23-30—**Pittsburgh.** Annual automobile show of Pittsburgh Automobile Dealers' Association, Motor Square Garden.
25-29—**Detroit, Mich.** Society of Automotive Engineers, annual meeting, Bork Cadillac Hotel.
30-Feb. 6—**Cleveland.** Annual Automobile Show of the Cleveland Automobile Manufacturers and Dealers Association, Public Auditorium.
30-Feb. 6—**Chicago, Ill.** National Automobile Chamber of Commerce, National Automobile Show.
30-Feb. 6—**Chicago, Ill.** Automobile Salon, Hotel Drake.

FEBRUARY

6-13—**St. Paul.** Annual Automobile Show, St. Paul Automobile Dealers, Inc.
13-20—**Kansas City, Mo.** Annual Automobile Show, Kansas City Motor Car Dealers' Association, American Royal Building.
13-20—**Los Angeles, Cal.** Automobile Salon, Hotel Biltmore.
22-March 5—**San Francisco, Cal.** Automobile Salon, Palace Hotel.

Production - - Engineering - - Factory

Black Shows Further Drop As Bright Car Colors Gain

DETROIT, Oct. 30.—Black's decline from an index of 209 to 180 is the greatest drop recorded for black since February. "Black's big drop this month is due in part to the fact that one of the large users of black has been out of production for a considerable period of late. In spite of this fact, however, the continuation of the general decline in the popularity of black may be interpreted to mean that a changed consumer consciousness toward colors of brighter chroma is on the make," says the November report of the Duco Advisory Service, as prepared by Howard Ketcham.

"The trend of the blue color family flattened out and maintained practically the identical position achieved last month. Limpid Byram blue, new to the list of blue leaders last month, has superseded serge blue in first place. Town car blue deep and stygian blue return to prominence this month. A bright, warm, rich blue called Everglades, slightly darker than Byram, makes its initial appearance in the group of blues of current popularity. Commander blue has dropped from prominence since its one appearance last month.

"Green's advance has been far greater than any recent climb recorded for any of the other color families. From current indications it would seem that black, blue and green are destined to dominate the automotive color horizon this winter, unless the inertia manifested by browns, grays and maroons terminates in an abrupt rebound. Pineridge, a soft, semi-dark green nuance of slight bluish tinge, which came into the group of leaders two months ago, has superseded blue rock in first place. Light, intense evergreen, and a light, neutralized value of green, called sage brush, have supplanted Henry and Sheffield in the green group. Strength among the individual greens appears to be particularly well proportioned and would seem to place this color family in a substantial position to maintain its current index for some time to come.

"Brown has established a new low point in its movement over a period of four years: Seal brown assumes leadership of this group at the present time. An extremely soft, grayish brown nuance, a revision of beaver brown, is the only addition to the browns of most recent fashion appeal. Boone brown has dropped from prominence.

"After ten months at the bottom of the chromatic heap, gray has surpassed maroon in popularity and is vying with brown for fourth place. The success of clear, neutral auto gray in attaining prominence has materially enhanced the current importance of the gray group.

"Maroon has declined to the lowest position among the six color trends portrayed in the index.

"At the twenty-fifth annual Salon de L'Automobile held last month in Paris, the most outstanding development disclosed was the considerable decrease in the volume of black cars on display. At last year's salon black prevailed on over 30 per cent. of the exhibits, while at this year's showing black was used on only 20 per cent. of the salon cars.

"Blue moved up appreciably from third to second place in importance this year, and in volume approximated very closely the total number of cars finished in black. In the blue color family, the darker shades, on the order of Stygian and Homage blue, appeared to find ready favor, although some novel opal nuances, such as Chantal blue and Cherüit blue, were observed.

"Maroon recorded a 45 per cent. gain over last year to rate third place in importance at the 1931 salon. The most prevalent values of maroon hue were clear, bright reddish values, such as Chester Hunt red and deep, wine tones on the order of Bavarian maroon.

"Green was more popular in light than in dark values and was the fourth color in importance from the standpoint of total cars in this hue at the salon. Soft, pale, yellowish greens, such as Baytree and lighter Verdancia, were seen in combination on quite a number of entries.

"There were more cars colored brown at last year's Paris Automobile Salon than there were in any other finish except black. This year brown was relegated to fifth place. The most notable decrease in popularity of this hue was apparent in the beige range. For the most part, what few browns there were on display were of high saturation.

"The prominence of ivory and yellow, coming next to brown in importance, furnished a real surprise and indicates that there is a strong under current of interest in extremely light, bright colors. This interest was originally manifested in the unusual number of cars entered at the Concours d'Elegance last June finished in ivory or white.

"Gray receded a trifle from the percentage of cars displayed in this hue at the 1930 Paris Salon. Although the very light grays seen last year were not particularly prominent at this time, nevertheless novelty values of gray similar to the Cornell gray variations created interest."

CANADIAN S. A. E. NOMINATES OFFICERS

Toronto, Canada, Oct. 30.—George W. Garner, chief engineer General Motors of Canada, Oshawa, was nominated chairman of the Canadian Section of Society of Automotive Engineers, succeeding Frank B. Averill of Dominion Motors, Ltd., at the regular monthly meeting of the section in the Royal York Hotel.

Alex Bentley, vice-president and general manager, Exide Battery Company of Canada, Ltd., was nominated vice-chairman, succeeding George Garner. Treasurer is E. W. Davis, assistant general manager General Motors of Canada, Oshawa. Secretary, Warren B. Hastings, editor of Canadian Motorists.

Newton F. Hadley, chief engineer, Plymouth Motor Corporation, Detroit, addressed the section on "Floating Power," showing several reels of talkie-movie in which the new Plymouth was shown under test at the plant and on extended tour.

WHITE TO REPRESENT ELECTRIC FURNACE CO.

Salem, O., Oct. 30.—The Electric Furnace Company, designers and builders of electric, oil and gas fired industrial furnaces, announce the appointment of Ray G. White as eastern sales representative. Mr. White was formerly with the Mahr Manufacturing Company, and has had over ten years' experience in the industrial furnace field. He will have charge of both electric and fuel furnace sales in northeastern Pennsylvania, eastern New York and the New England states, with headquarters at 55 West 42d St., New York city.

USL BRINGS OUT BULB TESTING BATTERY

A new addition to the USL dry battery line has just been brought out by USL Battery Corporation in the form of a bulb testing battery, known as USL No. 964, Type G-4-D.

This new USL 6-volt dry battery is packaged in a dark blue container with gold lettering. It is octagonal in shape and fits the hand easily, since it measures only 2⅝ inches by 2⅝ inches by 3⅞ inches high. The top is finished in red sealing wax with a special automobile socket embedded in the wax, its cap flush with the level of the sealing compound.

To test a single contact bulb, simply set it in the socket. To test a single filament, double contact bulb, set the bulb in the socket and push down to engage the second contact. If the bulb is a double filament type, simply turn the bulb around 180 degrees and push down again to test the other filament.

Since only momentary contact is required, the battery will last a long time, probably six months to a year, in average service. Battery and electric service stations, garages, car dealers, filling stations and, in fact, every one who sells 6-volt lamp bulbs, will find this latest USL battery a very handy tool. The list price is 90 cents.

LEAVENWORTH TO HEAD WESTINGHOUSE ADVERTISING

East Pittsburgh, Pa., Oct. 30.—Ralph Leavenworth has been appointed general advertising manager of the Westinghouse Electric and Manufacturing Company, according to an announcement made today by J. S. Tritle, vice-president and general manager. He will have charge of all advertising and publicity activities of the company, the announcement reads, including the advertising division of the merchandising department, now centered in Mansfield, O.

Summary of 1931 Truck Legislation

The following paper was presented at the Tuesday session of the transportation meeting of the Society of Automotive Engineers at the Hotel Shoreham, Washington, D. C. The paper has appeared in serial form and is concluded today.

By PIERRE SCHON
General Motors Truck Company, Pontiac, Mich.

Variations in Gross Weight Laws Present Intricate Problems for Manufacturers and Operators

Twenty states do not specifically designate the permissible gross weight on six-wheel vehicles, and in most of these twenty states the maximum as set for a four-wheel vehicle also applies to the six wheeler. Florida limits to 16,000 pounds, the same gross that is allowed for four-wheel vehicles. Georgia also has established the same gross for six wheels as for four wheels, 12,500 pounds. New York permits 44,000, and a 40,000-pound limit has been established in Colorado, Idaho, Connecticut, Illinois, Maryland, Massachusetts and Rhode Island. Virginia has a wheel limit of 8,000 pounds, which legalizes a 40,000-pound gross limit for a six-wheel truck. Arizona, Louisiana, Missouri and Nevada have a 38,000-pound limit. Delaware, Maine, Pennsylvania and Wyoming limit to 36,000 pounds; 34,000 pounds is in effect in California, Kansas, Montana, Utah and Washington. Arkansas limits to 28,000 pounds and North Carolina to 25,000 pounds. Indiana, Iowa, New Mexico, Oregon and West Virginia use the L plus 40 formula that is applied to four-wheel vehicles. The N. A. C. C. recommends 28,000 pounds gross for a four-wheel vehicle and leaves the door wide open for a variety of regulations on six-wheelers by recommending that a single vehicular unit of more than four wheels should be granted additional weight irrespective of axle spacing.

In the national code the gross vehicle weight has been eliminated entirely. Axle weights only are recommended, based on the spacing of axles and the L plus 40 formula for controlling the gross weight of vehicle combinations, primarily intended for the protection of bridges against concentration of excessive weight over a short span area.

AXLE WEIGHT RESTRICTIONS

Alabama	12,000	Kansas	18,500	Nevada	18,000	South Dakota	16,000
Arizona	18,000	Kentucky	18,000	N. Hampshire	15,000	Tennessee	....
Arkansas	....	Louisiana	16,000	New Jersey	....	Texas	....
California	17,000	Maine	18,000	New Mexico	18,000	Utah	18,000
Clorado	20,000	Maryland	....	New York	22,400	Vermont	....
Connecticut	....	Massachusetts	....	N. Carolina	....	Virginia	16,000
Delaware	18,000	Michigan	18,000	North Dakota	....	Washington	18,500
Florida	....		22,400	Ohio	18,000		22,400
Georgia	....	Minnesota	18,000	Oklahoma	16,000	West Virginia	18,000
Idaho	16,000	Mississippi	....	Oregon	17,000	Wisconsin	19,000
Illinois	16,000	Missouri	16,000	Pennsylvania	19,500	Wyoming	18,000
Indiana	16,000	Montana	16,800	Rhode Island	22,400	Dist. of Col.	22,400
Iowa	16,000	Nebraska	16,000	S. Carolina	15,000		

	No. of States
No regulations in	13
22,400 pounds in	5
20,000 pounds in	1
19,500 pounds in	1
19,000 pounds in	1
18,500 pounds in	2
18,000 pounds in	12
17,000 pounds in	2
16,800 pounds in	1
16,000 pounds in	11
15,000 pounds in	2
12,000 pounds in	1

N. A. C. C. recommends 22,400 per axle. National Safety Conference code is based on axle weights only:

	Pneumatics	Solids
Major highways in metropolitan areas	22,400	22,400
Major highways in industrial areas	18,000	14,400
Major highways in agricultural areas	16,000	12,800
Secondary highways in any area	16,000	8,000

National Safety Conference code also contains the L plus 40 formula for protection of bridges and has three additional classifications, controlling gross weights of vehicles or combinations of vehicles. L means distance between first and last axle, with provision that no single axle must exceed above maximum weights as given for the four classified areas, and also that no two axles can be spaced closer than 40 inches apart.

H-20 Bridge specifications	1330 x (L + 40) = Gross weight
H-15 Bridge specifications	1000 x (L + 40) = Gross weight
H-10 Bridge specifications	670 x (L + 40) = Gross weight

The predominating axle legal loads are 18,000 pounds in twelve states, and 16,000 pounds in eleven states. In Florida, a 16,000-pound weight is allowable by special permit from the county commissioners. In Montana axle weights of 16,800 pounds are permitted on four-wheel vehicles, and 13,000 pounds on six-wheel vehicles. In West Virginia 18,000 pounds is a base figure, but 22,400 pounds is permitted under certain conditions, and in agricultural areas the axle load is limited to 16,000 pounds. In Wisconsin 19,000 pounds is permitted on Class A roads, and only 12,000 pounds on Class B roads. While in most cases, these maximum weights apply to pneumatic as well as solid tires, there is a tendency to reduce the permissible axle weights where solid tires are used. Such reductions were applied this year in the states of Connecticut, Delaware, Indiana, Maine, Massachusetts, Minnesota, New York, Utah, West Virginia and Wisconsin. Kansas outlawed solid tires on July 1, 1931. Oregon prohibits solid tires outside municipal limits.

Wheel and Tire Loads

Only seven states have established permissible wheel loads; they are Arizona, with 9,000 pounds; California, with 8,500 pounds; Minnesota and New York, with 11,200 pounds; Oregon, with 8,500 pounds; Virginia, with 8,000 pounds and West Virginia, with 9,000 pounds. In West Virginia, however, under certain conditions, 11,200 pounds is permitted, and also under certain conditions, the wheel load is reduced to 8,000 pounds.

In connection with the load per inch of tire width, six states do not a limit of 600 pounds, and the remaining states have established limits falling below 600 pounds and in between 600 and 800 pounds. Seasonal restrictions are in force in various states, where the load per inch of tire is reduced in the early have any restrictions. Eight hundred pounds per inch of width predominates, twenty states having established this limit. Two other states, Utah and the District of Columbia, permit 800 pounds on tires over a certain width. In Utah it is on tires over five inches, and in the District of Columbia over seven inches. Ten states have established spring season each year. Tire load limitations are based, primarily, on solid tires, and are not practical in their present form for the pneumatic or balloon tire. This is clearly evidenced by the figures in this chart giving tire capacities per inch of nominal width. In the most popular sizes of the larger balloon tires, suitable for dual installations,

(Continued on Page 8)

Langsenkamp-Linkert Markets Carburetor Replacement Line

The Langsenkamp-Linkert Carbureter Company, which was recently formed : Indianapolis to manufacture and market a line of carbureters in the automotive, motorcycle and marine fields, will shortly have ready for the market a line of package replacement outfits. Every job will be made entirely of brass, the metal being selected because of its non-rusting, non-corroding character.

This company was formed at the time that the Marvel Carbureter Company purchased the Wheeler-Schebler organization and moved the plant away from Indianapolis. It is a division of the Langsenkamp-Wheeler Brass Works, a pioneer carbureter parts foundry.

The president of the new organization is H. W. Linkert; Henry Langsenkamp is vice-president; S. R. Hawkins is vice-president in charge of sales; A. M. Lang is vice-president in charge of manufacturing and Henry Langsenkamp, Jr., is secretary. Many members of the staff of the old Wheeler-Schebler organization have joined this new company. Mr. Linkert was formerly chief engineer for Schebler, Mr. Hawkins was replacement sales and service manager for that company. Maldwyn Jones for many years was in charge of motorcycle engineering for Schebler.

NEW RADIATOR SOLDER IN LIQUID FORM

Hercules Chemical Company announces that it now manufactures Hercules Radiator Solder. This product is a sister product of Hercules Radiator Stop-Leak.

These products will permanently repair leaks in radiators, cracked blocks, cylinders, water jackets, etc., it is claimed.

What the Standards Bureau Is Doing for Business

The following paper was presented at the Wednesday session of the national transportation meeting of the Society of Automotive Engineers at the Shoreham Hotel, Washington, D. C. It is appearing serially in Automotive Daily News:

By G. K. BURGESS,
Director National Bureau of Standards, Washington, D. C.

In order to bring forcibly to your attention without delay the significance of the statement just made, permit me to remind you of the fact that when the bureau undertook to conduct researches relating to automobile brake linings it dealt directly with the lining manufacturers, and reported its findings only to these manufacturers. Nevertheless, as a result of its findings, the poorest brake lining that any consumer can buy on the market today is much cheaper than, and manyfold superior to, the best that could have been purchased at any price before the research was undertaken by the bureau for this industry and the War Department.

Organized in 1901 for the major purpose of serving the Federal government, the bureau has been instructed by the lawmakers to render service also to the state governments, and has been authorized to make its service available to municipal governments. In developing its service for the governments, the bureau has accumulated many special and some unique testing equipments, and it has been authorized to utilize these equipments for industries, not for the purpose of serving the industries alone, but for the benefit of the country as a whole.

Weights and Measures

Let us consider the situation with respect to weights and measures. Although the Constitution gives to the Federal government the same jurisdiction on weights and measures as it does over coinage, the Congress has left to the states the enactment of laws and their enforcement as related to weights and measures, except as to food products and their containers, a field of activity administered by the Department of Agriculture. The Bureau of Standards maintains for the country the basic standards relating to weights and measures, thus giving to the state authorities and trade the opportunity to secure uniformity everywhere. The attainment of this highly desirable uniformity, not only as to the weights and measures themselves, but their tolerances and technique of use, is greatly enhanced through the proceedings of the Annual Conference on Weights and Measures held at the bureau and participated in by state officials and manufacturers of equipment.

In formulating its recommendations relating to the construction and operation of weighing, measuring and testing equipment, it gives due consideration to suggestions received from both the makers and the users of the apparatus as well as those of the lawmakers and the legalized inspectors.

Track scales owned by the railroads and industries throughout the country, which form the basis of charges for freight moving in carload lots and assessed on the weight basis, are tested by the Bureau of Standards under the direction of Congress. The bureau also calibrates annually each of the twenty master track scales throughout the United States employed for the purpose of determining the weights of test cars used by the railroads and industry in testing and adjusting the commercial track scales. It is of importance not only to the railroads, but also to the shippers that 75.9 per cent. of the scales tested during the last fiscal year were accurate within the allowable tolerance of 0.2 per cent., as compared with 32.5 per cent. in 1914, when the Bureau of Standards was authorized to undertake this work.

Each state and each of the larger cities has its own complete set of accurate standards of all the usual commercial measurements of quantities, the standard lengths, weights and capacity measure, furnished and certified by the National Bureau of Standards.

(TO BE CONTINUED)

WALKER PROMOTED BY CATERPILLAR CO.

Peoria, Ill., Oct. 30.—Gerald M. Walker, assistant advertising manager, Caterpillar Tractor Company since the merger of Holt and Best in 1925, has been promoted to head Caterpillar's advertising department with the promotion of Walter H. Gardner to head the newly organized special sales department of Caterpillar.

ALUMINUM COLORS, INC., HAS BEEN REORGANIZED

Aluminum Colors, Inc., of Indianapolis, Ind., has been reorganized and has moved into considerably larger quarters, and is now located at 537 East Washington St., Indianapolis, Ind. The new officers of the company are Fred A. Wales, president; B. R. Haueisen, vice-president; Richard E. Coulter, secretary-treasurer.

R. E. Pettit, who for a number of years has been engaged in the technical and commercial development of plating on aluminum with the Aluminum Company of America, Buffalo, N. Y., has joined Aluminum Colors, Inc., as sales engineer. Harry G. Colby, formerly of the Aluminum Company of America, sales division, Pittsburgh, Pa., has been appointed sales manager. Aluminum Colors, Inc., will continue the commercial and technical development of its Alumilite process, a protective and color coating for aluminum, as well as developing the field of electroplating on aluminum.

REO WORCESTER CO. NAMED DISTRIBUTOR

Worcester, Mass., Oct. 30.—The Reo Worcester Co., Shrewsbury Street, has been appointed distributor of De Vaux cars for Worcester county, according to William T. McOwen, treasurer of the company.

For many months a dealer under Boston, this organization was awarded a distributorship in reward for its sales record.

MULLINS STAMPINGS
FOR THE AUTOMOBILE INDUSTRY

WRITE!
Mullins Mfg. Corp., Salem, Ohio
332 So. Michigan Ave., Chicago.
General Motors Building, Detroit.

NEW PASSENGER CAR REGISTRATIONS, FIRST

Months	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle	Lincoln
January	1041	497	6716	917	41073	2402	75	1287	*	3815	828	3366	36958	316	1097	1865	1069	472	216
February	1676	379	6388	755	41564	2243	150	1443	*	4314	654	3264	39668	331	1263	1674	1282	418	250
March	3335	466	9408	1117	61062	5300	201	2660	*	6195	806	5064	60625	419	1825	2331	2020	720	363
April	4724	314	12588	1614	80743	7745	215	3649	93	7773	881	7070	81457	470	2169	2907	2562	968	490
May	4924	266	10835	1294	78668	7870	175	3431	804	7073	779	6047	74066	372	2234	2416	2372	920	443
June	3794	227	8686	1136	65798	6593	130	3364	909	5593	658	4787	58027	300	2154	1890	1827	703	393
July	3344	219	7965	995	58581	5892	103	3350	927	5340	775	3840	50349	276	2039	1825	1655	657	349
August	2339	195	6491	705	44058	4521	77	2714	665	4203	607	2755	38835	265	1467	1252	1258	458	267
Sept.	1694	126	5265	665	33324	3731	72	2063	518	3035	498	2072	30849	230	1887	1064	1040	429	219
Totals	26871	2689	74342	9198	504871	46297	1198	23961	3916	47341	6486	38265	470834	2979	16135	17224	15085	5745	2990

*Not in production at that time. **Carried in the miscellaneous column. †Combined with Oldsmobile.

FINAL REVISION, COMPLETE NEW PASSENGER

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Some of this data has been published previously, but it is given here complete for the convenience of our subscribers. Readers desiring

Returns for today: Arizona, California, Colorado, Iowa, Kentucky, Louisiana,

In this table 48 states and the District of Columbia

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle
Alabama	1		17		389	6	1	5		1		3	281		2		2	1
Arizona	4		20		119	9		8	6	10		2	130	2			1	
Arkansas			7	3	169	8		1		22		3	185		10	2		
California	200	23	464	80	2080	285	1	227	105	241	68	77	3164	14	166	64	81	37
Colorado	21	2	59	4	285	25		10	4	26	8	13	304		16	17	3	1
Conn.	39	1	134	16	549	71	2	57	11	53	6	50	447	8	50	22	22	11
Delaware	2		21	1	74	15		4		3	4	3	119		1	4	1	4
Florida	22		41	3	502	30	1	7	5	19	4	20	392	2	33	16	4	2
Georgia	16	1	55	4	577	21	1	13	7	40	1	16	602	2	22	14	14	4
Idaho	4	1	12		100	4	1	5	7	11	2	4	108		8	3	2	
Illinois	120	5	269	39	1741	247	13	165	27	209	9	124	1893	9	159	64	60	29
Indiana	68	1	146	16	1061	117	6	134	12	125	8	79	873	4	52	35	28	6
Iowa	20		56	2	842	63	1	22	13	85	23	34	708	2	20	22	15	
Kansas	12	5	38	2	520	16	3	15	2	34	5	27	364		10	15	4	2
Kentucky	16	2	35	3	696	78		19	9	62	10	38	494	1	5	16	28	2
Louisiana	8		18	3	479	27		20	5	26		15	365		1	7	11	1
Maine	14	1	60	2	224	16		9	6	20	1	40	226	3	20	21	4	1
Maryland	14		85	3	735	46		20		23	10	36	470	4	32	20	14	1
Mass.	74	10	317	44	1244	146	5	57	18	119	19	172	1400	28	68	69	57	37
Michigan	42	9	234	45	1409	161	5	99	50	228	25	164	1679	2	105	68	58	28
Minnesota	20		80	7	678	62	1	22	2	34	12	16	430		44	11	21	4
Miss.	3		18		261	9		2		5		3	250		5		3	
Missouri	47	1	104	11	1218	86	4	60	2	92	18	54	1031	2	45	23	31	9
Montana	2		9		80	14		5	1	5	5	5	82	4	2		4	1
Nebraska	10		40		474	19		11	4	28	1	8	362		26	3	5	1
Nevada	7		9		45	9		3	2	2		1	56		3	4	1	
N. Hamp.	9	1	34	3	207	17		7	5	13	3	13	184	4	11	9	6	2
N. Jersey	111	2	401	53	1445	265	4	54	21	125	65	105	1225	12	92	62	83	40
N. Mexico		1	5	2	73	3		2		4	2	1	60			1	1	
New York	290	12	933	156	3436	591	10	234	53	353	57	302	2705	78	252	156	146	81
N. Ca'lina	14	6	47	4	696	59		21	5	57		22	703	1	10	18	4	6
No. Dakota	1		18		122	10		3	5	6	4	5	160		3	3	1	
Ohio	112	4	195	38	1623	222	6	141	27	143	31	124	1472	11	123	56	66	26
Oklahoma	12	1	41	3	476	19	1	6	2	41	1	5	359		1	4	5	3
Oregon	7		33	1	222	29		24	4	14	8	4	247		20	6	3	2
Penn.	157	12	490	62	2487	442	2	200	30	324	36	210	2074	27	185	81	119	53
Rh. Island	16	2	49	9	225	48		45	2	25	1	13	208	4	25	9	11	3
S. Carolina	5		14		341	15		10	2	12		15	358		2	3	1	
So. Dakota		3	17		159	17		17	3	25	2		140			2	4	1
Tennessee	15	3	36	1	473	30	1	6	11	25		7	346	1	24	4	9	1
Texas	23	10	194	15	1670	86	1	67	2	81	5	30	1179	2	47	24	25	8
Utah	6		25	1	148	8		6	3	10	3	9	141		14	14	6	1
Vermont	7		24	1	95	10		5	3	10	3	14	107		6	11	3	4
Virginia	38	2	59	6	865	64		68	3	46	5	43	814		17	25	21	3
Wash.	15	1	70	8	281	37		50	11	30	18	10	332	2	17	10	7	3
West Va.	15		35		317	55	1	18	6	33	3	27	284		26	9	4	3
Wisconsin	30	4	124	5	890	82	1	51	20	78	7	69	656		52	29	26	4
Wyoming	5		11	2	80	7		1	2	9	1	2	63		2	3	1	
Dist. of C.	20		62	7	442	25		27		48	4	35	617	1	53	5	14	3
Totals	1694	126	5265	665	33324	3731	72	2063	518	3035	498	2072	30849	230	1887	1064	1040	429

Visco-Meter Logarithmic Chart Aids Quick Computations

The Visco-Meter Corporation laboratory, Buffalo, N. Y., announces the completion of an entirely new logarithmic chart of viscosites. This chart is said to save considerable time and calculating by means of its instantaneous indication S. A. E. rating of any oil plotted. It also provides a simple determination of viscosity at important temperatures for both lubricating and fuel oils.

The chart measures 26 inches by 29 inches. Its ranges are as follows: (a) Universal Saybolt, from 40 to 200,000 seconds; (b) Farenheit temperature, from 20 degrees to 330 degrees; (c) Centigrade temperature, from 30 degrees to 166 degrees; (d) Furol Saybolt, from 30 to 20,000 seconds. There is a table of Redwood at Englar multipliers for the range of the chart.

The use of logarithmic plotting for viscosity curves is not by any means new. All that is necessary for a complete viscosity temperature curve is merely an accurate determination of the viscosities of an oil at two temperatures, usually 210 degrees Farenheit and 100 degrees Farenheit or 210 degrees Farenheit and 130 degrees Farenheit.

Points are located from this known data and a staight line drawn between them and, if so desired, extended to the limit of the chart. From the line thus drawn it is possible to determine what viscosity the oil has at any temperature within the limit of the chart, or conversely what temperature is required to bring the oil to a certain viscosity. It will be noticed that various bases of oils cause when plotted the lines to assume pitchs to the axis of the chart that are characteristic—so that each base when plotted has its particular slope or pitch. It is then possible to recognize immediately the base of an unknown oil merely by the slope of its line, and conversely knowing the base and just one viscosity temperature point, establish the rest of the required data by gauging the slope and passing through the one known point.

NINE MONTHS OF 1931 BY MAKES AND MONTHS

Months	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
January	827	2622	917	2363	1230	181	396	2376	4175	678	3270	52	95	534	2021	773	266	126,786
February	662	2347	1083	3872	1125	130	397	2104	5018	590	3121	39	68	1666	3112	863	220	134,133
March	601	3935	1595	6058	1406	175	517	3008	7959	749	4802	34	71	969	3557	1120	368	200,841
April	618	5259	1912	7487	1778	214	624	4395	11069	891	6074	42	41	478	5102	1122	194	265,732
May	575	4622	1799	6356	1483	144	573	3985	10795	606	5420	40	26	260	5079	778	197	247,727
June	441	3786	1373	4944	1335	101	452	3896	8229	539	4741	**	†	133	4266	582	124	201,911
July	443	5173	1194	4748	1880	91	355	14599	7542	532	4513	41	†	97	3852	617	133	194,291
August	299	3855	890	3648	1561	61	265	19134	5408	452	3413	26	†	73	2721	700	69	155,707
Sept.	391	2872	746	2521	1609	48	219	16881	4458	447	3000	41	†	64	2081	615	101	124,875
Totals	4857	34471	11509	41997	13407	1145	3798	70378	64653	5484	38354	315	301	4274	31791	7170	1672	1,652,003

CAR REGISTRATION STATISTICS, SEPTEMBER, '31

Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies

Maine, Mississippi, Nevada, New York, Tennessee, Texas, Vermont and Wyoming

Comparative figures for September, 1930, will be found on Pages 8 and 9

States	Lincoln	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Alabama			7		1	5			16	9		17			16	1		781
Arizona			16	1	5	2			45	7		16			4	1		408
Arkansas			4	1	5	2		1	56	6		2			3			490
California	29	8	207	54	130	122	2	28	1322	191	30	379	2	3	113	47	4	10,048
Colorado		5	22	11	16	9	1	2	119	50	1	32	1	1	26	6	1	1,101
Conn.	3	6	61	21	52	39		6	275	123	18	67			25	6	1	2,252
Delaware			6	1	9	7			28	17		8			9	3		344
Florida	3	1	24	5	15	9		1	202	57	4	14			13	4		1,455
Georgia	3	1	40	3	18	8		2	132	39	3	43			13	2	1	1,718
Idaho			12		2				44	5	1	5		1	8	2		352
Illinois	13	15	205	41	207	110	6	13	1138	283	27	181	4		126	29	17	7,597
Indiana	7	26	58	29	106	25		3	650	168	7	119	4	3	92	12	1	4,081
Iowa	2	4	40	6	47	13		3	264	120	10	52		2	70	12	1	2,574
Kansas		2	27	8	25	2	1	2	130	66	10	19		2	31	4		1,403
Kentucky		9	23	6	10	12		2	287	68	6	36	1	1	52	6		2,033
Louisiana	1	1	47	2	13	6		1	106	40	3	23		1	10	3		1,243
Maine	1	2	38	14	18	13			120	56	5	30	2		24	1		992
Maryland	1	1	46	14	28	20	2	1	232	96	11	45			23	3	1	2,037
Mass.	11	26	176	35	132	113	10	27	665	267	26	182	1		61	42	3	5,661
Michigan	11	7	78	32	182	78	2	3	1175	212	41	75		2	69	13	2	6,393
Minnesota			25	8	45	22		1	391	73	3	38	1	1	40	12	1	2,105
Miss.	1		13	1	2	2		1	43	16		15			7	1		661
Missouri	9	22	77	14	54	36	2	5	474	128	12	41	2	3	62	18	19	3,816
Montana			6	3	4	2			43	26	2	5		1	5	1		317
Nebraska		3	13	4	18	5			156	50	3	32		2	35	9		1,322
Nevada	2		6		4	2			18	7	1	9		1	3	1		196
N. Hamp.	1	2	23	6	31	13		3	116	35	4	21			17	7		807
N. Jersey	13	89	222	47	175	170	3	31	737	221	25	185	5	3	89	53	3	6,236
N. Mexico			3						28	8		1		1	1			197
New York	51	36	532	115	442	339	9	30	2054	493	72	477	13	16	276	153	19	14,972
N. Ca'lina	4	1	6	2	23	12		2	253	72		23			21	1		2,093
No. Dakota	1	2	3	1	8	1			53	12		8		2	14		2	448
Ohio	8	25	134	38	132	85	8	6	1343	254	13	151	4	11	143	42	9	6,826
Oklahoma	1		5		17	4		1	108	44	2	14			8	1		1,185
Oregon	1		24	8	18	2			81	22	8	23			11	3		825
Penn.	21	67	278	87	228	170		13	1787	403	32	195	1	2	250	62	7	10,594
Rh. Island	2	1	23	6	14	11	2	7	131	58	8	27			6	5		996
S. Carolina			1	6	7	4			71	16	1	8			1			893
So. Dakota			4	1	23	2			62	18		12		1	9	3		525
Tennessee		2	11	2	12	9		3	184	24	1	33			21			1,295
Texas	3	7	59	17	37	31		7	366	121	23	82			46	5		4,273
Utah		2	15	3	7	4			22	12	1	16		1	7	2		487
Vermont			11	6	7	4			52	21	3	10			14	2		433
Virginia	1	5	32	17	24	20		6	273	109	3	34		2	45	12		2,662
Wash.	2		40	18	38	5		2	210	44	6	66			26	6		1,365
West Va.	2	3	24	13	19	13			177	54	5	23			44	2		1,215
Wisconsin	5	5	110	25	73	22		3	433	148	13	72		1	77	13	2	3,130
Wyoming	2		4	4	5			1	20	3	2	4			2			236
Dist. of C.	4	5	31	10	33	24		2	189	86	1	30			13	4	7	1,802
Totals	219	391	2872	746	2521	1609	48	219	16881	4458	447	3000	41	64	2081	615	1101	124,875

Relation of Motor Coach Chassis to the Body

The following paper was presented at the Thursday session of the National Transportation Meeting of the Society of Automotive Engineers at the Hotel Shoreham, Washington, D. C. The complete paper will appear in serial form in Automotive Daily News.

By GEORGE H. SCRAGG
Mack International Motor Truck Corporation, New York City.

DEVELOPMENT and refinement of motor bus chassis has now proceeded to a point where their principal characteristics no longer chiefly govern those of the complete vehicle. The body today is the arbiter of chassis construction. Completely harmonious design of the bus requires mutual adaptation between chassis and body, so that each to some extent must be subserved to the other. Formerly the problems of bus chassis construction were so incompletely solved that the first consideration of the producer was to create a chassis which would successful perform under bus conditions. The body was then adapted to the more or less arbitrary dimensions, arrangement and structural characteristics of the chassis. The wonder is not that the bodies fell as short of complete satisfaction as they did, but that body designers were able to build as well as they were under these circumstances.

This reversal of emphasis from the chassis to the body did not originate with the builders. The inspiration came from the operators, who found such public appreciation of comfort and luxury that they demanded more refinement in the body. This caused the builders to vie with each other in the provision of luxurious appointments, comfortable seating, generous aisle space, convenient doors, ample headroom, thoughtful positioning of windows, mitigation of wheel-house obtrusion and so on. This was the beginning of the transition of stress from the chassis to the body.

Along with this access of comfort consciousness came an aesthetic awakening. Rider appeal became as essential as durability and performance. Operators who had relied principally upon speed, reliability and safety for attraction of patronage, now realized that comfort and attractive appearance were also vital for maintenance or increase of traffic volume. These influences reversed the locus of predominance. The chassis became subserved to the dictates of body requirements.

By this, of course, is not meant that the exactions for performance, economy or reliability were relaxed in any way. They have, on the contrary, become more severe under the pressure of intensified competition. The demand has been that the means of attaining them shall be dictated by the paramount demands of body layout and mounting.

The chassis came first, because it was only through the development of motor truck chassis capable of carrying large loads at good speed and with fair riding ease that modern types of motor buses were made possible. For operating effectiveness the chassis must have a large power-to-weight ratio, for economy it must be as light as possible and for reliability and ease of maintenance as simple and compact as may be. Nevertheless, the requirements of roominess, capacity, comfort and convenience of the body have steadily increased the necessary weight, size and complication of the chassis, which, together with performance requirements of ever increasing severity have required continued increase in engine power, brake effectiveness and steering ability.

As chassis, engines, frames and tires, among other things increased in size to keep up with these developments, the tendency has been to increase the difficulties with which body designers have had to contend. For example, the ideal body would be low and spacious, with little or no encroachment from the wheel housings, rear springs or axle housing, with a chassis frame so rigid as to subject it to the minimum racking stress. This requires a heavier chassis, however, whose low-hung frame must have a hefty kick-up over the rear axle, whose springs must be long and heavy, and whose axle housing must be large enough for the large gears necessary to transmit the power of the bigger engine needed to propel the heavier bus. All of this requires larger rear tires, which not only make the wheel housings wider and of greater diameter, but make them loom higher in the body by reason of the low floor. To sur-

(Continued on Page 9)

1931 Truck Legislation

(Continued from Page 5)

capacities range between 309 and 495 pounds per inch of nominal width. There is, apparently, no need for such regulations, as the solid tire is disappearing rapidly on modern highway transport vehicles.

BALLOON TIRE CAPACITY PER INCH OF NOMINAL WIDTH

Tire size	Capacity	Capacity per inch	Tire size	Capacity	Capacity per inch
8.25—20	2550	309	11.25—20	5450	484
9.00—20	3250	361	11.25—22	5800	515
9.00—22	3500	380	11.25—24	6050	537
9.00—24	3650	405	12.00—20	6250	520
9.75—20	3900	400	12.00—24	6950	579
9.75—22	4200	430	12.75—20	7200	565
9.75—24	4400	451	12.75—24	8000	627
10.50—20	4700	448	13.50—20	8200	607
10.50—24	5209	495	13.50—24	9100	675

While the N. A. C. C. code has a recommended scale of tire loads, the National code has eliminated all recommendations on load per inch of tire.

RESUME

The facts as presented so far clearly illustrated a situation similar to the one which existed during the early decades of railroad building, when a variety of gauges were used and the rolling equipment was not interchangeable between the different railroads. A standard gauge truck was eventually agreed on, but legislation did not interfere with that program of standardization.

As pointed out in a previous paper submitted on this same subject, our state legislatures have erected forty-nine boundary lines preventing the free circulation of motor vehicles from one state to another, as we do not find any two neighboring states having uniformity in regulations for sizes and weights of commercial motor vehicles.

Vehicles which can be legally operated in one state are prohibited from crossing the state line into neighboring states due to difference in state regulations and, therefore, such state laws interfere with the free movement of interstate commerce.

The initial step toward securing a closer uniformity of laws governing maximum sizes and weights of vehicles was taken by the National Conference on Street and Highway Safety in 1926, when the original code was set up under the able leadership of President Hoover, then secretary of commerce and acting as chairman of that committee. The original Hoover code was amended in 1930 to better meet changes in vehicles and highway construction, but very little has been accomplished so far in getting state legislatures to adopt the new code; as a matter of fact, legislative results of 1931 indicate that the situation is becoming more complicated.

It has also been definitely demonstrated this year that national uniformity of regulations, the ultimate objective, cannot be achieved as long as highway transportation is regarded as an individual state problem. It has been suggested that some action may be taken by the Federal government along the following lines:

1. A complete classification of all highways by the United States Bureau of Public Roads in co-operation with the United States Army, from the standpoint of national defense.

2. Action by Congress to limit the use of the Federal aid fund to the construction of primary highways only until a network of such national highways is completed. On all such primary highways, partly built with Federal aid fund money, vehicles of a specific size and weight, as recommended in the national code, should be permitted to operate legally, regardless of individual state regulations.

Such action would be of inestimable value to the public in general, bringing about a lower cost of distribution of all necessities of life.

As vehicle manufacturers are compelled to conform and change their designs to meet this great variety of constantly changing state laws, production economies cannot be effected, due to limited quantities of certain types of vehicles salable in only a few of the states. Dormant markets cannot be cultivated due to legal restrictions in sizes and weights preventing the sale of heavy-duty vehicles in over twenty states. Maximum economy in operating costs cannot be obtained by operators because they are prevented by legislation from using the most economical type of equipment to meet the requirements.

Compulsive and premature obsolescence caused by sudden changes in regulations as we saw happen in Texas this year, where hundreds of trucks have to be junked next January 1, is causing irreparable losses to operators amounting into millions of dollars. Operators cannot decide on immediate purchases, as the uncertain of future changes in the state laws may force them to discontinue operation of comparatively new and expensive equipment.

No other industry is facing uncertainties of this kind, and, obviously, the time has arrived for the S. A. E. to take action and give serious consideration to assist in setting up a standard code on maximum limitations of sizes and weights of vehicles, taking into consideration:

1. Practical design limitations from the standpoint of the vehicle and tire manufacturers.

2. Safe and economical operation.

3. Limitations of pavement and bridge structure as set up by the United States Bureau of Public Roads.

4. Safety to the public on the highway.

The United States Bureau of Public Roads, the National Conference on Street and Highway Safety, the motor vehicle conference committee of the N. A. C. C. and the American Association of State Highway Officials are all striving for the same objective: namely, a standard, uniform, workable code along sane, safe and practical lines. A code whose sound and basic fundamentals would enlist the support of our:

Highway engineers.

Safety commissioners.

Manufacturers.

Shippers and operators' associations throughout the country.

These charts can be secured without charge from the General Motors Truck Company, Pontiac, Mich.

CANADIAN RUBBER EXPORTS SHOW LOSS

Montreal, Oct. 30.—Exports of rubber (excluding insulated copper wire and cable) for the month of September was slightly under the total for the previous month and also lower than in September, 1930, according to figures, issued by the Dominion Bureau of Statistics.

Total exports for the month were $1,100,573, as against $1,414,401 in August, and $1,854,885 in September, 1930. These exports were distributed as follows: $349,558 to the United Kingdom; $4,597 to the United States and $746,418 to other countries.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

NEW PASSENGER CAR REGISTRATIONS, FIRST

Months	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle	Lincoln
January	672	*†	7792	580	42689	3485	139	2584	*†	5046	2015	5391	70257	616	2036	2325	2166	794	331
February	910	*†	7284	468	53753	3173	137	3104	*†	5397	1957	6231	88916	705	1839	2875	1745	780	272
March	1447	*†	10619	831	73585	5800	218	4457	*†	7466	2608	8953	122957	964	2638	4098	2899	1203	437
April	1744	*†	14358	1317	83372	8235	290	4822	*†	9375	2951	9864	146112	1034	4645	4482	3458	1591	623
May	1619	*†	14210	1344	79775	8752	275	4346	*†	8843	2607	8493	143535	794	4655	4136	3189	1583	541
June	1065	43	8551	1036	58107	6951	174	3794	*†	6301	2004	5320	112749	610	3488	2635	2572	1023	369
July	991	1139	8981	1055	56129	6160	188	3640	*†	5764	2260	4650	109372	526	3195	2420	2728	822	352
August	689	1057	16316	817	46807	5331	141	2432	*†	3928	1371	3706	77476	464	2069	2143	1782	661	246
September	620	807	13288	1383	39023	4521	96	1887	*†	3024	1240	3278	65578	544	1908	1945	1265	1017	377
Totals	9757	3046	101399	8831	533240	52408	1658	31066	*†	55144	19013	55886	936952	6257	26473	27059	21804	9474	3548

*Not in production at that time. †Viking combined with Oldsmobile.

COMPLETE NEW PASSENGER CAR

This table is repeated for comparative purposes only.

States	Auburn	Austin	Buick	Cadillac	Chevrolet	Chrysler	Cord	De Soto	De Vaux	Dodge	Durant	Essex	Ford	Franklin	Graham	Hudson	Hupmobile	La Salle
Ala., '30			52		463	19		3		7		2	748		7	2	7	
Ariz., '30		9	44	1	111	5		7		15	13	4	255		5	4	7	1
Ark., 1930	1		27	2	324	25		8		21	12	10	429		7	1	2	5
Cal., '30	76	124	1238	216	2829	368	8	255		262	281	202	6389	41	198	151	101	148
Col.,1930	8	14	138	6	415	30	1	3		48	19	27	643	1	33	11	12	5
Conn., '30	23	7	271	35	459	96	3	73		83	13	89	854	17	38	44	41	35
Dela., '30		3	75	9	96	18		4			7	11	195	1	1	8	3	4
Fla., '30	6	30	110	7	642	53	2	11		19	9	46	847	4	38	22	8	3
Ga., '30	1	7	122	9	618	30	1	14		35	1	9	1087	3	13	8	11	7
Idaho, '30	1	4	44		209	14		12		19	16	10	295		8	6	1	1
Illinois,'30	43	35	783	107	2167	310	12	158		206	31	176	3688	60	132	110	78	110
Ind., '30	29	22	309	24	1036	98	3	69		68	9	86	1594	8	58	61	33	18
Iowa, '30	16	23	218	11	1618	100		24		96	54	90	2025	4	40	42	27	6
Kan., '30		28	146	1	725	27		9		35	9	43	1020		14	34	6	5
Ky., 1930	4	12	85	5	607	57		16		34	5	46	892	6	15	17	9	5
La., '30		9	46	6	493	37	1	22		49	3	23	840	8	23	12	10	3
Maine, '30	4	4	125	11	270	37		17		45	10	99	392	6	15	22	7	9
Md., '30	2	2	182	13	731	49	1	17		22	12	41	867	15	30	23	21	8
Mass., '30	24	26	571	75	1144	203	4	53		157	31	270	2530	30	54	130	61	93
Mich., '30	7	30	817	144	1507	142	3	44		103	43	195	3666	1	83	136	46	62
Minn., '30	5	8	216	6	1010	78		25		38	20	50	1350	1	42	36	24	16
Miss., '30		3	63	1	382	26		4		12	3	6	481	1	10	2	12	1
Mo., '30	18	25	311	36	1248	79	2	37		82	30	103	1802	19	54	37	28	14
Mont., '30	3	1	41	3	136	17	1	7		9	5	19	159	4	4	8	4	2
Neb., '30	3	18	165	4	948	69		13		57	8	36	1316	2	12	6	10	3
Nevada, '30	3	2	22		62	15		7		17	5	7	107	1	6	9	2	3
N. H., 1930	4	5	91	4	178	27		16		18	9	21	321	4	9	7	10	1
N. J., '30	41	41	783	72	1394	222	4	57		104	31	169	2495	36	81	112	88	56
N. M., '30			29		154	8		3		4	3	5	159		5	1	1	
N. Y., '30	132	68	1956	258	2546	659	24	169		265	64	354	5374	81	183	251	152	153
N. C., '30	2	4	120	10	667	72		12		28	7	28	1193	6	10	22	4	3
N. D., '30		4	64		354	16	1	7		11	14	23	438	1	10	7	2	1
Ohio, 1930	42	21	608	67	1827	227	7	117		136	66	220	3295	48	105	131	61	44
Okla., '30	3	23	193	18	991	33		10		80	12	20	1217	10	13	11	9	9
Ore., '30	2	13	110	1	267	23		18		16	38	22	503	4	22	18	7	
Penn., '30	39	64	1181	84	2548	558	7	218		306	118	326	4343	59	221	201	144	90
R. Isle., '30	6	1	93	15	172	51		31		24	12	24	313	5	16	13	13	10
S. C., '30	1	9	49	3	390	13		13		18	1	9	622		1	10	3	1
S. D., '30	1	3	50	1	418	24		3		39	17	19	487	3	9	5	10	
Tenn., '30	4	12	126	9	533	42	1	21		35	10	24	918	2	35	14	23	8
Texas,' 30	15	46	556	43	2563	166	2	102		137	40	40	3532	11	76	17	28	20
Utah, '30	9	2	58	6	209	8	3	13		19	19	23	320	4	19	6	4	3
Vt., '30	2		55	2	106	20		3		15	4	23	200	1	8	13	7	3
Va., 1930	6	10	131	8	1119	78	3	30		57	17	40	1354	4	34	28	31	9
Wash., '30	8	17	250	8	434	71		48		37	62	37	1006	11	18	29	37	9
W. Va.,'30	7	1	78	5	444	51		15		49	13	35	723	9	21	16	13	6
Wis., '30	14	10	362	15	1103	119	2	58		64	24	89	1504	9	46	72	22	13
Wyo., '30		1	15		73	3		1		7		4	110		2	6	6	
D. of C., '30	5	6	109	22	283	28		10		16	10	23	680	3	24	13	19	11
Totals, '30	620	807	13288	1383	39023	4521	96	1887	*	3024	1240	3278	65578	544	1908	1945	1265	1017

*Not in production at that time.

Gramm Adds Trailer Line With 3 to 18 Ton Capacities

Delphos, O., Oct. 30 — Gramm Motors, Inc., is just announcing a line of semi-trailer units with a nominal tonnage rating of from three to eighteen tons, embodying a number of interesting features in design and construction.

One of the features is a double channel frame construction designed to put an abundance of strength at the center of the frame where the greatest strain occurs and yet maintains as light a frame construction at either end as possible. The steel platform base is so designed that bodies can easily be built with rounded corners in the front. The standard Gramm bodies for these trailers have rounded corners.

Upper half fifth wheel installation is securely riveted to a large channel reinforced by a heavy steel plate, which tends to strengthen the frame at this point and also to maintain alignment.

Each stake pocket is riveted to the end of the cross I beams instead of to the skid rail.

A booster brake is used in conjunction with hydraulic brakes. This booster is designed with a special relay valve which makes it possible to operate tractor and trailer brakes simultaneously to avoid jackknifing.

Springs are of chrome vanadium steel.

Helper springs are standard equipment on Gramm trailers. This helper spring is designed to assist under extra heavy loads and to absorb side sway.

A tire carrier is standard equipment, being mounted when possible underneath the frame, accessible from the side of trailer.

The front support is adjustable for height and reinforced with two truss rods to give strength with minimum amount of weight.

The height from the ground to the bottom of the body is approximately six inches less than the average trailer.

Relation of Motor Coach Chassis to the Body

(Continued from Page 7)

mount the axle housing, a ramp floor must be used, and so on.

Originally motor buses were simply truck chassis carrying passenger bodies, instead of the familiar cargo types. As trucks these chassis had proven amazingly adaptable to all sorts and varieties of loading: Bulky or dense, solid, liquid, gaseous or live; rigid, plastic or fluid; perishable, fragile or indestructible. It had been possible to adapt standard chassis to the requirements of any of these loads without serious change, but when human freight was added to the list the necessary modifications of the chassis began to multiply. Whereas in a truck chassis versatility and adaptability were outstanding virtues, in motor bus chassis it has been found that specialization of design for a single body type is most desirable.

Nowhere is this better illustrated than in the case of frame structure. Because of its adaptability to a limitless variety of body structures, the straight, flat, rectangular frame of the truck is ideal for cargo work, but wholly unsuited to heavy-duty bus bodies. Bus frames must be long. Long frames tend to be more flexible than short ones. But bus frames must be stiff. There was a time when bus bodies were actually stiffer in both torsion and bending than the frames which supported them, so that the body was called upon to act as a truss and anti-twisting stay for the frame. This naturally led to much body trouble for which body builders were unjustly blamed. Chassis designers who were accustomed to commercial work assumed that the body would be designed for a certain amount of wholesome weave and so purposely allowed their chassis frames a limited amount of flexibility on the excellent principle that such flexibility served to distribute the stresses and strains, thus making a lighter structure feasible. Body designers, knowing the importance of light weight, had assumed that the chassis frame would be rigid and constructed their bodies so as to depend upon the chassis frame to hold the body rigidly on a flat plane.

A bus body, because of its box form is inherently rigid and can tolerate very little flexing or weaving because of its glazing and the necessity for quiet. Attempts have been made at flexible body construction as well as flexible chassis mounting. Doubtless there are possibilities in both directions, but so far all such efforts have resulted in localized stresses in the complicated framing of the body which requires much heavier construction if permanence and quiet are to be realized.

(To be continued)

NINE MONTHS OF 1930 BY MAKES AND MONTHS

Months	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
January	1053	3657	1489	3326	1827	429	431	3182	5036	807	3975	116	178	1937	2039	1164	530	180,094
February	957	2891	1920	4346	1623	433	540	2570	6010	921	3699	94	161	1960	2523	1070	481	211,645
March	1365	4812	3007	6564	2360	500	728	4119	8662	1271	5415	87	286	2639	3761	1427	641	298,824
April	1643	6275	3046	7501	3038	660	912	6262	11043	1429	6458	76	406	2714	4909	1851	567	357,063
May	1430	5819	2852	6865	2940	483	864	9243	8943	1077	6291	78	342	2367	4472	1782	496	345,041
June	1025	4913	1901	4829	4008	332	628	8368	5776	744	5107	60	181	1529	3045	1299	405	260,942
July	1080	5227	1736	4901	3261	306	534	8089	5324	791	6001	70	†	1400	3070	1518	417	254,097
August	781	3939	1762	3220	2220	228	464	6836	4944	962	6050	64	†	1133	2136	1220	342	203,737
September	975	3855	1689	2657	2362	169	530	6020	4981	871	4750	52	†	1194	2229	882	269	175,286
Totals	10309	41388	19402	44209	23639	3440	5631	54689	60719	8873	47746	697	1554	16873	28184	12213	4148	2,286,729

REGISTRATION STATISTICS, SEPTEMBER, 1930

figures for September, 1931, will be found on Pages 6 and 7

States	Lincoln	Marmon	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Whippet	Willys	Willys-Knight	Miscellaneous	Totals
Ala., '30	2				1	6		1	24	5	2	12			2	1		1,366
Ariz., '30	1	1	19	4	8	4		1	12	6		29		3	3	1		573
Ark., 1930	1	1	16	3	6	1			38	13	3	8		4	2	1		971
Cal., '30	36	59	356	128	154	254	14	45	235	255	65	573	2	96	102	81	63	15,405
Col.,1930	4	14	69	16	23	14		2	70	45	6	39		20	25	5	1	1,767
Conn., '30	4	21	72	58	43	75	1	15	69	109	19	100	2	10	27	12	9	2,827
Dela., '30	3	2	4	8	3	9			14	15		7		3	5	1	1	510
Fla., '30	6	13	24	21	18	15		2	63	56	6	11		13	6	2		2,113
Ga., '30	8	6	21	8	9	10		2	68	34	7	45		9	11	3		2,217
Idaho, '30	2	1	17	4	5				27	7	4	12		7	2	3		731
Illinois,'30	30	60	228	85	204	201	8	42	331	356	46	401	12	40	114	60	22	10,446
Ind., '30	5	82	66	36	105	30	3	4	193	165	14	166	1	29	90	10	3	4,527
Iowa, '30	9	9	88	44	82	31	1	2	242	180	17	80	1	59	104	9	2	5,354
Kan., '30		14	42	17	19	6	1		93	101	9	28	3	21	33	4		2,493
Ky., 1930	5	17	26	14	13	12	1	1	105	46	15	45		23	44	7	1	2,190
La., '30	4	9	69	13	15	12	1	1	50	52	2	43		4	7	8	1	1,876
Maine, '30	3	13	54	27	25	12	4		76	64	12	42		20	33	10	2	1,470
Md., '30	4	7	53	13	30	19	2	7	81	99	21	52		11	17	7	5	2,464
Mass., '30	26	70	282	65	103	178	16	59	184	240	53	212	1	29	61	49	14	7,098
Mich., '30	23	41	89	99	188	121	4	10	308	227	82	162		65	95	20	2	8,565
Minn., '30	5	11	54	25	35	28	4	3	213	127	11	94		42	58	15		3,650
Miss., '30	1	2	26	2	4	3		1	24	11	3	27		5	1	1		1,118
Mo., '30	4	16	110	46	89	39	1	17	166	133	20	91	1	39	58	15	21	4,791
Mont., '30		2	10	6	3	1		1	18	12	2	12		3	7	4		504
Neb., '30	6	3	33	19	35	11		1	162	74	3	82		29	62	9	4	3,197
Nevada, '30	1	2	4	1	3	2			7	7		6			4	1		306
N. H., 1930	2	14	41	8	23	15	1	2	41	29	9	30		4	15	5		964
N. J., '30	17	41	212	109	175	172	12	55	167	198	44	267	4	30	77	61	12	7,439
N. M., '30	1	2	3	3	2	1			2	6		4		2	7	1		406
N. Y., '30	83	136	525	206	336	435	19	104	475	453	95	607	16	83	203	165	46	16,678
N. C., '30	2		25	4	15	6		4	72	52	3	18		13	9	5		2,416
N. D., '30		7	25	8	10	1			45	43	4	24		27	35	4		1,186
Ohio, 1930	14	87	242	135	186	138	23	25	400	338	48	256	4	114	240	59	18	9,349
Okla., '30	3	4	44	22	24	11		8	82	74	1	34		32	23	4	3	3,021
Ore., '30		5	17	7	18	11		3	41	29	11	42		6	4	12		1,270
Penn., '30	22	93	376	179	247	256	20	46	766	412	79	391	2	83	281	98	24	13,882
R. Isle., '30	3	5	22	6	21	13	3	13	35	36	16	29		6	12	19	1	1,039
S. C., '30	2		10	9	5	5			29	17	5	11		1				1,237
S. D., '30	2	6	17	9	52	4			61	31	4	28		11	19	3		1,336
Tenn., '30	2	6	26	7	24	17		5	58	31	5	43	1	44	19	8		2,113
Texas,' 30	10	28	86	34	50	54	2	20	232	169	35	158	1	30	38	21	2	8,364
Utah, '30	1	1	27	7	8	7		1	13	26	7	22		5	5			855
Vt., '30	1		23	11	10	8	1	1	38	23	5	9		11	17	6	2	628
Va., 1930	3	10	32	35	25	10	6	4	102	123	8	41		9	36	16		3,419
Wash., '30	2	8	34	15	45	33	3	3	115	76	20	90		19	42	21	2	2,610
W. Va.,'30	4	12	28	23	26	13		1	95	90	23	30	1	25	53	12		1,922
Wis., '30	4	22	184	68	93	26	2	12	217	225	21	184		47	109	15	2	4,757
Wyo., '30	1		8	2	5				12	4		6		1	2	1		270
D. of C., '30	5	12	16	24	34	32	16	6	49	57	6	47		7	10	7	6	1,596
Totals, '30	377	975	3855	1689	2657	2362	169	530	6020	4981	871	4750	52	1194	2229	882	269	175,286

GAMMA RAYS DETECT DEFECTS IN STEEL 12 INCHES THICK

Gamma rays from radium can be made to shine through steel objects twelve inches thick and reveal their internal defects, Prof. Gilbert E. Doan of Lehigh University says in a research narrative issued by the Engineering Foundation.

Valves for high-pressure power plants and pipe lines can be made safe for use by this means. Battleship parts, such as the sternpost and keel knuckle, can be tested before the trial run is made. Welded parts can be inspected to be sure the welds are sound.

"This method of testing reminds one of the shining of X-rays through thin objects for the same purpose, but it is simpler in some respects, although requiring especial procedures in other respects," Prof. Doan points out.

"The success of the principal experimental campaign was beyond the highest hopes of those interested in the development of the investigation. Clear-cut shadows of defects in the interior of steel objects eight, ten, and even twelve inches thick had been registered on the film. Tiny flaws, only 2 per cent. of the thickness of the whole object, had been clearly revealed.

"No large investment in testing machinery, due to become obsolete in ten years or less, was necessary, because radium, the only costly investment, does not decay to half its strength for 1,600 years. The cost of the testing operation was well within reason, if radium could be procured at a fair figure. No risk whatever to the operator was necessary. Science and invention have placed another bulwark behind the safety of our civilization's structures."

NEW PASSENGER CAR REGISTRATIONS FOR FIRST

Name of Car	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Mass'setts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska
Auburn	36	30	8	3019	214	553	31	227	88	44	2709	925	277	107	159	78	111	300	1384	996	382	5	669	49	99
Austin	10	10	1	541	32	16	7	114	22	14	151	44	34	65	30	7	4	11	70	91	31	5	75	10	32
Buick	356	269	191	6329	936	1800	296	710	807	152	4539	1695	1024	740	413	288	686	946	4377	3352	1297	182	1863	290	675
Cadillac	19	14	26	987	48	297	37	60	67	2	771	136	69	47	29	27	63	74	502	546	105	2	166	10	21
Chevrolet	5157	1434	3506	29733	5339	6925	1340	7339	8443	1734	28637	14505	14800	9484	8482	5533	3470	9424	18124	22559	15059	3838	19780	2425	8665
Chrysler	163	74	193	2944	346	868	185	545	380	106	2909	1159	787	313	736	306	297	574	1970	1890	1153	158	949	242	407
Cord	2			70	16	11		20	9	4	193	70	14	13	11	11	2	13	37	46	15	1	47	4	8
De Soto	75	89	60	2432	92	752	27	106	143	90	1851	1338	272	174	269	213	118	227	503	1110	330	35	537	135	105
*De Vaux	1	24		960	41	78	3	17	22	37	201	52	119	11	37	20	25	6	133	403	33		33	29	17
Dodge	141	133	355	3411	520	1035	31	318	507	182	3735	1497	1199	637	860	427	392	438	2201	2604	864	121	1496	195	487
Durant	2	4	14	907	194	70	55	38	13	47	291	124	257	89	95	9	39	118	247	329	156	1	238	75	65
Essex	51	45	36	1366	334	852	92	443	207	48	2144	1278	858	581	514	146	804	575	3484	2908	756	40	891	148	226
Ford	4559	1617	3006	38139	4418	6268	1389	7276	8440	1562	29438	12494	10809	6357	7009	5063	3676	6972	24081	26948	10334	3267	14422	2126	7295
Franklin	2	2	1	215	9	97	8	56	29	6	177	38	13	14	9	14	33	51	271	12	13	1	43	19	8
Graham	29	6	94	1387	194	381	8	324	147	61	1048	390	242	149	98	67	137	259	571	811	441	33	529	30	148
Hudson	19	41	15	1138	236	421	44	280	146	42	971	530	442	352	170	89	291	239	1241	1222	417	23	313	101	114
Hupmobile	50	38	15	1035	80	328	12	117	214	11	1138	380	209	80	200	115	90	260	859	524	495	61	431	52	108
La Salle	17	7	22	448	36	173	32	31	42		583	82	45	27	26	23	52	56	511	241	71	4	117	14	12
Lincoln	4	5	3	304	13	46	7	31	27	3	313	48	34	13	22	17	11	29	174	171	41	5	76	3	19
Marmon	34	5		168	62	94	2	82	36	1	344	330	53	64	101	40	34	30	183	201	44	4	290	32	31
Nash	92	144	104	2494	348	766	68	245	256	106	2535	595	520	334	168	379	418	480	2439	724	594	185	927	145	225
Oakland	12	28	11	787	120	378	34	80	58	25	852	264	179	131	91	25	167	223	524	593	222	6	376	48	55
Oldsmobile	39	102	61	1741	245	708	114	218	333	64	3903	1600	1013	394	197	182	396	380	2205	3281	1193	40	1241	121	405
Packard	41	29	11	1026	66	414	66	105	66	10	1251	182	131	53	82	52	108	193	853	536	286	13	272	9	58
Peerless				58	6	3	1				195	8	2	11	2	3	2	75	70	25	5		21	1	3
Pierce-Arrow	2	3	3	343	35	120	5	28	44		274	40	9	15	19	24	10	49	347	43	51	3	136	6	5
Plymouth	232	158	394	3784	614	986	125	745	542	226	4146	2495	1643	746	1298	380	665	939	2861	5258	2627	152	2186	317	1019
Pontiac	148	71	186	2760	536	1532	235	779	524	102	4847	2056	1943	1194	587	342	869	1260	3529	3737	1879	161	2103	326	757
Reo	13	5	15	428	45	139	2	75	31	22	352	112	83	77	64	18	56	82	336	374	134	3	141	42	32
Studebaker	157	125	64	4224	377	705	48	244	458	116	2830	1245	638	451	324	228	364	518	1863	962	860	139	863	157	518
Stutz		1	1	22	7	3		1	1	1	64	20	2	7	3	2	4	2	3		2		11		
Whippet	34	3	53	126	109	9	4	16	36	16	172	316	168	99	160	4	17	22	17	362	90	15	473	29	124
Willys	214	48	54	1547	439	347	58	203	127	110	1887	1183	1296	558	566	106	298	367	970	1045	1279	69	1418	182	618
Willys-Knight	13	8	7	612	49	95	15	34	20	14	422	106	96	70	82	24	40	72	357	169	153	13	196	24	103
Miscellaneous			8	153	12	11		1	4		287	68	8	1	5	9	1	10	15	8	186		153	2	22
Totals	11724	4572	8518	115638	16168	27281	4381	20908	22289	4958	106160	47405	39288	23458	22918	14271	13750	25274	77312	84081	41598	8585	53482	7398	22486

*Six months' report.

NEW PASSENGER CAR REGISTRATIONS FOR FIRST

Name of Car	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska
Auburn	5	9	14	777	66	254	34	65	40	12	742	321	171	33	79	44	28	70	453	145	91	3	216	32	44
*Austin	4	13	11	348	35	54	9	63	31	14	116	77	70	61	36	31	18	20	111	160	52	15	89	2	34
Buick	610	446	408	7395	1160	2294	420	982	841	316	7019	2127	1525	1360	572	556	786	1409	4856	4895	1519	582	2428	322	1053
Cadillac	25	10	37	1009	37	294	54	76	56	4	656	138	71	35	39	36	79	78	527	623	71	13	166	17	19
Chevrolet	6652	1867	5440	29255	6176	6407	1435	6884	7217	2632	31942	14677	20905	11303	8590	6190	3246	9160	15487	23597	15695	6357	22222	2915	11006
Chrysler	235	108	404	3780	428	1137	182	550	301	148	3628	1179	988	501	675	414	450	683	2285	1596	1265	393	1117	227	596
Cord	1	3	3	233	10	19	4	31	12	2	245	84	19	7	12	3	4	9	67	52	14		36	12	13
De Soto	91	154	181	3317	235	915	42	202	171	148	2567	1212	315	377	344	322	233	208	847	1184	403	173	670	179	193
Dodge	233	225	528	4122	658	1289	38	374	475	287	3805	1638	1559	970	820	683	465	487	2897	2019	890	309	1635	294	351
Durant	17	105	93	2833	449	177	115	69	104	188	823	339	700	199	209	32	168	196	500	721	481	42	672	142	229
Essex	241	88	173	2822	509	1455	141	552	188	144	3302	1993	1161	828	814	263	1023	803	4498	3622	1078	112	1769	256	438
Ford	9989	3028	8518	65450	9157	11349	2709	11978	12206	3764	58349	26076	26536	16055	13516	9892	5351	12106	37108	63057	25661	8999	31088	3883	15221
Franklin	3	11	10	527	29	205	16	65	62	10	553	72	33	19	45	30	42	81	403	130	18	3	124	44	14
Gardner				92	13	5					176	11	1	4	2	20	3		43	2	16		99		10
Graham	128	100	138	2301	366	660	15	427	208	114	1708	667	516	245	190	191	139	425	1007	1259	719	92	943	83	238
Hudson	125	61	57	1814	271	656	71	341	170	73	1686	911	593	511	246	166	323	330	1699	1890	532	61	577	149	145
Hupmobile	109	101	57	1511	188	596	51	152	179	32	1883	451	401	197	244	165	133	322	1171	824	489	91	643	102	202
Jordan			1	15	3	47	2	12			49	27	1		7		3	14	50	53			14		
La Salle	53	18	62	907	77	361	52	96	77	4	936	133	79	38	46	38	77	111	699	497	157	19	233	23	24
Lincoln	17	8	18	360	16	56	9	42	29	3	428	73	50	25	31	21	17	33	169	162	48	16	87	3	33
Marmon	35	49	21	580	164	202	10	137	66	13	762	667	199	94	149	86	68	82	503	420	144	29	295	91	81
Nash	95	179	185	2934	541	909	77	241	160	141	3020	849	786	564	252	562	477	499	2551	910	723	325	1136	246	320
Oakland	24	65	52	1383	172	527	67	172	82	65	1309	504	350	283	147	125	188	276	745	1044	493	29	562	105	141
Oldsmobile	67	156	79	2108	293	666	75	200	280	101	3465	1654	1233	470	242	199	368	482	1670	3026	951	76	1662	127	617
Packard	75	58	23	2076	132	729	110	195	112	19	2049	361	229	98	132	112	159	283	1666	1058	465	29	469	14	111
Peerless	1	15		197	12	60	1	3			366	60	24	49	21	20	34	34	271	65	22		82	3	12
Pierce-Arrow	8	7	17	483	48	186	12	38	31		344	61	30	27	27	21	25	73	490	100	80	6	181	11	8
Plymouth	254	133	520	1905	545	682	128	417	358	219	3564	1806	1926	915	1033	361	673	605	1826	2851	2275	157	1721	328	1148
Pontiac	143	136	233	2993	553	1244	236	460	268	183	4405	2184	1853	1250	590	538	665	1016	2815	3053	1974	205	2083	291	807
Reo	19	6	18	745	55	344	2	99	35	18	546	153	117	104	130	29	68	108	630	672	142	23	177	52	43
Studebaker	246	352	123	5396	384	1083	75	152	400	143	3810	1607	894	492	438	294	470	638	2292	1641	1113	179	917	227	647
Stutz		4	1	49	12	23		1	2	2	139	22	11	24	8	4	3	4	39	4	4		32		3
Viking	3	11	4	147	14	27	6	16	29	9	205	80	31	16	7	9	5	11	89	191	39		54	8	31
Whippet	90	54	70	474	256	139	30	120	73	97	879	621	789	382	379	66	114	228	364	557	729	84	1236	139	514
Willys	59	115	43	974	391	328	62	155	134	76	1737	872	1202	609	473	118	286	314	881	984	1122	45	1192	185	548
Willys-Knight	13	52	31	1085	152	211	14	60	35	16	803	161	177	164	117	74	107	121	734	232	262	26	322	68	162
Windsor				136		1			1		138	2		3	5	5		54	7	3	8		123		
Miscellaneous	5		2	199	4	33	4	3	9		180	30	28	4	5	1	5	8	38	42	17		108	6	17
Totals	19675	7747	17575	152732	23611	35624	6308	25430	24442	8997	148334	63900	65573	38316	30672	21721	16303	31281	92488	123341	59762	18498	77180	10586	35575

*Four months' report.

NINE MONTHS OF 1931 BY MAKES AND STATES

Name of Car	Nevada	N. Hampshire	New Jersey	New Mexico	New York	No. Carolina	No. Dakota	Ohio	Oklahoma	Oregon	Penn'vania	Rhode Island	So. Carolina	So. Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Dist. of Col.	Totals
Auburn	37	82	1703	3	5259	156	27	2016	98	123	2487	275	51	25	142	157	51	83	183	194	226	689	18	285	26,871
Austin	3	5	80	13	199	72	2	73	42	22	202	21	35	24	39	215	5	1	56	52	30	54	2	15	2,689
Buick	94	393	4755	245	13487	616	199	2869	842	508	6475	702	296	245	502	2529	223	326	848	911	399	1741	168	756	74,342
Cadillac	10	34	680	13	2214	42	3	441	85	38	762	81	9	2	40	179	23	19	61	59	38	145	10	85	9,198
Chevrolet	597	2396	19997	1210	51870	8113	2660	26448	8574	4062	35695	3075	5069	3091	7068	24052	1772	1359	11474	4835	4828	13123	1241	5727	504,871
Chrysler	124	191	2670	80	8105	655	135	2681	367	345	5073	531	258	235	273	1392	88	182	648	552	544	1017	110	387	46,297
Cord	4		54		228	6	1	82	8	9	67	6	3	2	2	26	2	1	8	15	11	36	1	9	1,198
De Soto	34	88	752	21	3215	170	24	2043	98	250	2305	430	163	112	159	839	62	64	460	507	188	583	13	298	23,961
*De Vaux	11	21	230	1	328	38	20	123	5	69	287	8	15	38	37	9	42	6	6	76	40	197	6	1	3,916
Dodge	70	175	1842	122	5148	666	171	2311	873	313	4234	410	235	355	534	1639	173	188	755	498	646	1452	180	565	47,341
Durant	11	37	413	26	594	9	38	429	26	190	496	25	1	58	22	86	39	18	45	219	26	146	4	51	6,486
Essex	43	311	1820	10	5472	458	61	2643	122	133	3602	362	174	109	253	462	141	310	668	298	354	1174	127	331	38,265
Ford	642	2591	17601	1022	48555	8879	2038	25915	6105	3846	29057	2885	4567	2342	6497	19776	1584	1487	10951	5346	4606	9755	973	6849	470,834
Franklin	3	32	206	3	679	13		188	26	38	398	45	3		19	53	12	5	5	37	12	30	2	29	2,979
Graham	23	79	685	9	2253	108	53	945	82	257	1753	143	26	39	144	476	125	37	163	217	235	430	12	257	16,135
Hudson	28	127	920	19	2342	215	36	957	108	108	1396	118	91	53	83	283	103	135	271	157	138	494	42	103	17,224
Hupmobile	16	77	868	2	2445	45	22	935	57	45	1543	139	82	84	138	361	58	80	279	262	107	262	38	238	15,085
La Salle	10	24	408	4	1167	32	2	252	33	24	591	79	15	2	32	115	10	28	30	26	32	98	2	57	5,745
Lincoln	7	16	149	4	723	14	9	141	20	18	231	26	3	2	23	47	5	3	19	17	15	39	3	37	2,990
Marmon	5	20	307	7	606	16	21	485	16	27	616	8	2	6	14	115	13	3	72	20	48	105	3	57	4,857
Nash	25	277	2508	46	6568	107	97	1744	153	265	3071	304	47	98	173	626	147	169	268	268	247	1547	84	341	34,471
Oakland	5	65	733	14	1787	24	25	754	92	68	1113	97	30	44	44	141	31	69	178	140	141	424	19	162	11,509
Oldsmobile	26	319	2584	49	6642	305	113	2963	195	240	3781	152	124	415	289	512	81	168	357	563	306	1283	88	567	42,298
Packard	16	71	1029	5	2788	63	1	677	106	60	1341	89	29	21	72	244	25	45	160	94	94	220	4	240	13,407
Peerless		1	72		121			207			111	25				5		2	4	5		17		84	1,145
Pierce-Arrow	1	14	376	4	770	15		185	41	25	319	73	4	1	23	125	3	9	40	29	8	75	2	42	3,798
Plymouth	85	444	2235	112	8393	935	288	5455	567	445	6988	505	359	444	707	1857	81	355	962	1050	960	1818	167	628	70,378
Pontiac	36	442	2914	65	7651	745	322	4638	795	370	5037	698	317	243	349	1473	143	248	1290	650	790	2159	74	741	64,653
Reo	5	28	302	6	919	14	14	293	36	60	349	128	16	7	30	209	21	19	37	94	61	120	13	22	5,484
Studebaker	85	192	2229	44	6266	169	127	2016	236	337	2887	301	98	187	388	1219	124	87	387	693	228	1076	73	427	38,354
Stutz		1	19	1	76			27	1		7	2			4	5	2	1	3	4	1	2	1	1	315
Whippet	3	10	38	12	468	27	72	505	61	10	206	6	2	62	22	66	6	8	29	62	27	89	5	4	4,274
Willys	14	229	1068	50	4282	215	265	2851	178	116	3153	179	50	217	296	657	69	221	365	419	632	1076	48	152	31,791
Willys-Knight	5	37	573	12	1543	17	20	700	51	40	700	54	4	19	24	105	14	18	46	127	56	139	9	63	7,170
Miscellaneous		1	39	1	206		2	152	45	2	170	2	1		5	17			1	3	1	36		24	1,672
Totals	2078	8850	72859	3235	203369	22959	6868	95144	20144	12463	126503	11984	12179	8582	19247	60072	5278	5754	31129	18499	16075	41651	3543	19635	1,652,003

NINE MONTHS OF 1930 BY MAKES AND STATES

Name of Car	Nevada	N. Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Dist. of Col.	TOTALS
Auburn	31	57	776	13	2640	13	5	641	60	39	840	95	1	17	46	112	67	35	54	159	55	167	5	81	9,757
*Austin	11	12	169		333	26	7	152	46	73	317	9	25	12	54	125	14	8	42	44	16	43	3	31	3,046
Buick	208	498	5743	416	16194	907	238	4408	2056	846	8766	828	424	307	1059	4497	313	426	1114	1795	569	2864	202	840	101,399
Cadillac	5	38	627	4	1905	46	1	484	91	28	676	63	8	2	65	189	26	20	47	61	30	162	5	78	8,831
Chevrolet	563	2116	16065	1785	40965	7238	3568	28918	15003	4465	33635	2718	4859	4856	9286	31367	2195	1519	11388	6302	6516	16193	1086	3377	533,240
Chrysler	132	264	2769	111	7465	704	196	2758	640	361	6150	518	249	306	509	1665	158	266	725	922	544	1305	125	296	52,408
Cord	3	3	64	1	312	2	3	92	20	5	99	13		4	13	24	13	9	14	18	9	32	2	8	1,658
De Soto	84	177	1139	84	3418	231	100	2258	373	290	3027	454	180	91	271	1642	158	76	403	710	306	719	37	155	31,066
Dodge	154	190	2110	143	5037	708	195	2886	1517	471	4912	465	226	470	805	2387	273	222	893	721	859	1549	166	234	55,144
Durant	57	94	680	42	1433	69	145	1035	236	585	1635	70	26	264	113	648	244	47	200	884	166	596	25	116	19,013
Essex	98	326	2582	65	7030	509	173	3924	377	421	4909	393	207	263	507	828	272	370	748	764	692	1641	100	414	55,886
Ford	1007	3581	31509	2507	82988	13589	4894	55714	19832	8146	63494	4679	7460	6646	14943	44855	3870	2710	16847	13594	9639	24050	1656	7696	936,952
Franklin	5	31	364	2	1295	40	6	507	71	73	646	49	13	10	43	153	25	18	48	97	52	114	7	39	6,257
Gardner	5	1	24		101		2	75		21	80	6			3	19		1		3	1	27			866
Graham	36	106	1115	35	3265	201	97	1592	275	342	2702	164	55	97	315	734	175	147	294	352	403	819	28	245	26,473
Hudson	85	124	1461	36	3598	296	64	1755	223	232	2505	180	135	122	198	399	114	143	266	375	242	842	44	162	27,059
Hupmobile	26	95	1239	3	3066	57	16	1398	199	173	2319	134	84	142	291	475	63	98	347	478	155	407	49	196	21,804
Jordan	1	5	85		273			94	2	3	99	2				22			3	15	4	18		10	934
La Salle	18	23	630	20	1570	49	7	436	106	43	845	92	21	9	100	222	16	45	77	62	52	137	5	72	9,474
Lincoln	5	10	148	4	785	28	2	197	44	25	220	26	7	5	33	94	7	6	29	24	15	45	2	33	3,549
Marmon	15	52	481	13	1541	58	83	803	82	93	943	26	43	39	70	327	30	25	119	88	155	204	10	62	10,309
Nash	55	308	2722	58	7030	201	214	2170	423	272	3758	264	111	209	278	844	175	217	344	431	386	1940	80	216	41,388
Oakland	10	80	1051	28	2528	110	86	1424	291	165	1899	122	67	102	118	509	61	98	278	236	275	744	19	191	19,402
Oldsmobile	62	213	2411	64	6123	226	170	3430	439	313	4094	253	111	596	329	803	130	152	307	695	384	1456	79	418	43,525
Packard	24	80	1704	17	4540	97	14	1330	253	116	2466	179	61	48	183	419	69	87	191	195	151	362	12	277	23,639
Peerless		13	276		474	4		493	8	1	388	64		1	4	47		15	50	31	9	75		135	3,440
Pierce-Arrow		20	510	1	1187	10		248	97	25	580	84	2	6	84	185	5	14	44	21	22	122	1	49	5,631
Plymouth	97	249	1413	103	5007	575	372	4109	783	410	5972	347	278	572	596	2032	101	360	799	1028	740	1963	124	309	54,689
Pontiac	47	263	2143	96	6171	544	353	4592	1253	475	4682	513	252	353	529	2226	202	217	1137	701	739	2471	65	517	60,719
Reo	3	99	403	5	1123	18	16	499	110	110	726	190	31	41	52	460	30	44	82	139	118	179	7	48	8,873
Studebaker	92	217	2561	57	6780	157	205	2590	401	453	3795	265	113	306	612	1387	159	124	381	811	344	1518	67	338	47,746
Stutz		1	37		136		1	44	6	1	28	1			6	8	8		6	1	7	12	1	2	697
Viking	8	5	142	4	370	9	11	140	36	19	147	5	3	25	34	54	16	8	12	40	16	68	2	22	2,238
Whippet	17	53	341	46	1366	184	236	1425	512	73	1041	49	50	267	310	662	33	146	280	270	346	610	30	42	16,873
Willys	24	149	921	46	3344	159	244	2598	449	127	2783	205	32	294	286	887	35	135	401	400	499	1164	37	60	28,184
Willys-Knight	19	59	824	28	2193	34	54	1036	99	126	1069	149	5	46	71	291	12	53	123	287	129	218	18	72	12,213
Windsor			16		55	1		27	14		176				13	11		3	1			2			805
Miscellaneous	1		69		299	1	5	69	12	12	91	7	1	2	8	56		2	24	3	4	64		65	1,543
Totals	3008	9612	87324	5837	233940	27101	11783	136351	46439	19433	172514	13681	15140	16529	32237	101665	9069	7866	38118	32757	24649	64902	4099	16906	2,286,729

Bonus Distributions in 1932 Over 500,000 Copies

Revised Schedule

The regular circulation of Automotive Daily News calls for the production each year of over two and one-half million copies. Apart from this regular circulation Automotive Daily News distributes at shows, conventions, etc., over 500,000 additional copies. The bonus distributions alone equal the entire annual circulation of some automotive publications.

Advertisers may use the bonus distributions as a guide to scheduling their advertising so that the greatest value per advertising dollar may be procured.

Below is a schedule of these bonus distributions but not indicated is a total of approximately 50,000 which goes to vehicle merchants in the United States on the occasion of their car and truck announcements in this publication.

1932 BONUS DISTRIBUTION SCHEDULE:

O—SALES ANALYSIS ISSUES: These issues, indicated by O below, will give not only the passenger car and truck registrations of that month but breakdowns for four previous years and other valuable breakdowns of registration figures.

ADDED DISTRIBUTION SALES ANALYSIS ISSUES: Commercial car sales analysis issues to 5,000 fleet owners and truck dealers. Passenger car sales analysis issues to 3,000 passenger car dealers.

Issues or Events	Month	Date	Amount and Class of Distribution	No. of Issues
Annual New York and Chicago show Issues	January	9-16 30 Feb. 6	300,000 total (see note) both shows. Vehicle Dealers, Jobbers, Fleet Owners, Bus Operators, Factory Executives, Service Stations, etc.	12
O	January	6th	November 1931 Passenger Car Sales Analysis.	1
O	January	16th	November 1931 Commercial Car Sales Analysis.	1
O	February	6th	December 1931 Passenger Car Sales Analysis issue. Also Complete 1931 annual report passenger car analysis.	1
O	February	19th	December 1931 Commercial Car Sales Analysis Issue. Also Complete 1931 Annual Report Commercial Car Analysis.	1
Truck and Bus O	March	18th	January 1932 Commercial Car Sales Analysis Issue. 5,000 Extra to Truck Dealers, Truck Fleet Owners and Bus Operators.	1
O	March	12th	January 1932 Passenger Car Sales Analysis Issue.	1
O	April	9th	February 1932 Passenger Car Sales Analysis Issue.	1
Factory Equipment	April	15th	February 1932 Commercial Car Sales Analysis Issue. 3,000 Extra to Plant Managers, Production Managers, Safety Engineers, Purchasing Agents.	1
O	May	7th	March 1932 Passenger Car Sales Analysis Issue. Also First Quarter Passenger Car Sales Analysis.	1
Truck and Bus O	May	13th	March 1932 Commercial Car Sales Analysis Issue. Also First Quarter Commercial Car Sales Analysis. 5,000 Extra to Truck Dealers, Truck Fleet Owners and Bus Operators.	1
O	June	11th	April 1932 Passenger Car Sales Analysis Issue.	1
Annual S. A. E. Summer Meeting	June	12th to 17th	5,000 Extra daily to Engineers, Production Managers, Plant Superintendents, other Factory Executives. Also distribution at the meeting.	4
O	June	17th	April 1932 Commercial Car Sales Analysis Issue.	1
O	July	9th	May 1932 Passenger Car Sales Analysis Issue.	1
Factory Equipment	July	15th	May 1932 Commercial Car Sales Analysis Issue. 3,000 Extra to Plant Managers, Production Managers, Safety Engineers, Purchasing Agents.	1
O	August	6th	June 1932 Passenger Car Sales Analysis Issue. Also Second Quarter Car Sales Analysis.	1
O	August	12th	June Commercial Car Sales Analysis Issue. Also Second Quarter Commercial Car Sales Analysis Issue.	1
Annual Review and Reference Number	August	27th	30,000 Extra to Engineers, Production Managers, Jobbers, Truck Wholesalers and Retailers, Truck Fleet Owners, Bus Fleet Operators, etc.	1
O	September	10th	July 1932 Passenger Car Sales Analysis Issue.	1
Factory Equipment	September	16th	July 1932 Commercial Car Sales Analysis Issue. 3,000 Extra to Plant Managers, Production Managers, Safety Engineers, Purchasing Agents.	1
O	October	8th	August 1932 Passenger Car Sales Analysis Issue.	1
O	October	14th	August 1932 Commercial Car Sales Analysis Issue.	1
Annual A. E. R. A.	October	*	4,000 Extra daily to Bus Operators, Truck Fleet Owners, Truck and Bus Wholesalers and Retailers, Shop Equipment, Parts and Accessories, Wholesalers.	3
Machine Tool Builders A. S. M. E., S. A. E., Production Meeting	October	*	5,000 Extra daily to Plant Managers, Production Managers, Safety Engineers, Purchasing Agents. Distribution at the meetings.	4
O	November	12th	September 1932 Passenger Car Sales Analysis Issue. Also Third Quarter Passenger Car Sales Analysis.	1
Annual M. E. A. and N. S. P. A.	November	*	5,000 Extra daily to all Accessory, Parts and Shop Equipment Wholesalers. Distribution at the shows and conventions.	5
Truck and Bus O	November	18th	September 1932 Commercial Car Sales Analysis Issue. Also Third Quarter Passenger Car Sales Analysis. 5,000 Extra to Truck Dealers, Truck Fleet Owners and Bus Operators.	1
O	December	10th	October 1932 Passenger Car Sales Analysis Issue.	1
Factory Equipment	December	15th	October 1932 Commercial Car Sales Analysis Issue. 3,000 Extra to Plant Managers, Production Managers, Safety Engineers, Purchasing Agents.	1

Note: Write for details of other show and convention issues.
* Some exact dates not known at time of printing.

No extra charge is made for advertising in any issues with bonus distribution. The entire list of bonus-distribution issues may be purchased as a unit.

With very few exceptions, these issues are published on our regularly scheduled days.

The extra distributions described are 100% to the trade and are made by man delivery at hotels, shows, conventions, etc., and by mail also to the groups shown. Some duplication is inevitable because the net paid A. B. C. circulation of Automotive Daily News consists of car and truck merchants, factory executives and jobbers.

Automotive Daily News

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